THE
JOURNAL OF BUSINESS
of the University of Chicago

VOLUME X JANUARY 1937 NUMBER 1

THE RATIONALE OF BANKING RESEARCH

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BANKING research presents no unusual problems as long as it is concerned with specific banking operations. The determination of per-item banking costs can be ascertained by a method of analysis very similar to that used in the case of industrial establishments; market surveys follow similar lines whether undertaken by banks or mercantile houses; and the selection and training of bank personnel raise no new problems of methodology for a man with experience in personnel management in other types of business. In all of the practical problems of bank operation, as they affect either single banks or groups of institutions within a particular area, the customary methods of investigation and analysis can be (and often have been) profitably applied. To be sure there are differences of detail, but in all such cases the problem can be readily defined, the data collected and analyzed, and the relevant conclusions attained.

At the present time, however, we are confronted by a somewhat different problem. National organizations such as the Association of Reserve City Bankers and the National Bureau of Economic Research, as well as the state bankers' associations of some forty states, are considering a comprehensive program of

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banking research, and (although many of the specific investigations will naturally deal with problems of procedure and operation similar to those discussed in the first paragraph) the program as a whole raises two new and important problems. In the first place, how can all the subjects of investigation be related to one another in such a way that the results can be profitably co-ordinated; in the second how can a macroscopic study of the whole banking system be most satisfactorily planned?

In reality these two problems are opposite facets of the same intellectual difficulty, since a clear recognition of what is loosely called "the banking problem" would show the interrelationship of the numerous minor problems as well as indicate the broad questions toward which research must be directed. What is needed is, obviously, a schematic definition of the problem.

INDUCTION VERSUS DEDUCTION

To state this need is one thing: to meet it satisfactorily is quite a different matter. It can be assumed that everybody interested in such a research program is anxious to improve the banking system as a whole; but there are so many different "banking problems," each of which appears urgent to those people who are in close touch with it. Where shall we begin?

To an enthusiastic believer in induction, the task may appear simple. All that is needed, he will suggest, is to collect the facts on each of the specific problems—no matter in what chronological order—so that, at last, there will be available a body of facts adequate to serve as the basis of a general plan of banking reform. But what facts ought we to collect? And how can we be sure that particular problems are basic? Such a method of approach (which is not unlike that of the National Monetary Commission twenty-five years ago) gives no certainty that we shall obtain a scientific answer to the macroscopic problem. And, still worse, it may actually confuse the issue.

A comprehensive study of the American financial system, if it is to be successful in revealing defects and suggesting remedies, must obviously begin with a viewpoint broad enough to cover the whole range of the problems involved. Before any of the specific studies are undertaken it is necessary that preliminary think-

ing should develop a co-ordinated picture, indicating not only the sections of the field in which significant problems will be found but also the reasons why these problems exist. Unless something of this kind is adequately done, a nation-wide program of banking research may involve much waste of time and money, as well as jeopardize its chances of ultimate success by the failure to demonstrate to all interested parties the signifiance of their particular contribution to the solution of the problem as a whole.

Such a schematic plan of research is not easily drawn up. It involves elements of banking history and banking theory as well as close familiarity with the present financial structure—and each of these fields of knowledge is full of pitfalls and surprises for the unwary. The following pages are not, therefore, to be regarded as a dogmatic statement. They represent an effort to crystallize the problem and show the relationship of its parts in such a way that specific criticism and discussion may ultimately produce a clearer and more widespread recognition of the precise nature of the task that lies before us.

EARLY DEVELOPMENT OF BANKING

To what extent does the history of commercial banking point toward contemporary problems? Broadly speaking, commercial banking (in the sense in which we now use that term) came into existence in England during the fifteenth and sixteenth centuries. Prior to that time the scattered financial institutions of which we have record partook of the nature of "giro-banks," or general financiers, whereas the earliest commercial banks resembled their modern descendants in performing the interrelated operations of "discount, deposit and issue."

The idea of commercial banking spread rapidly, both within England and to other countries, but until the early nineteenth century the principles of commercial banking changed very little. The commercial bank was the handmaid of business: it managed what Mr. Keynes has very usefully called "the business circulation," and in the recognition of this fact lies the key to many problems.

Fundamentally, throughout this period, the circulation of

bank notes and of checks drawn against deposits was confined to merchants and industrialists; those people who were not directly connected with business (or "trade" as the English called it) did not have bank accounts and continued to use gold and silver coin in their dealings.[1] (If bank checks only were considered the distinction would be even more clear cut, since the use of these did not become common among the general public until long after notes were to be found in the average man's purse.) It follows, therefore, that the deposit liabilities of the commercial banking system represented the unemployed working-capital funds of commerce and industry, and could reasonably be expected to vary in aggregate amount with any changes affecting the volume of working capital.

This was the basic fact that underlay the liquidity theory at the time of its early development, and upon the continuance of the circumstances stated above, the continued validity of the liquidity theory in its narrow form must necessarily depend. If we exclude finance bills, a bill of exchange can only come into existence when marketable goods have been produced and sold to a buyer who has undertaken to pay for them after a stated interval of time; any increase of bills on the money market, therefore, must necessarily indicate an increased production of marketable goods coupled with a willingness of buyers to purchase those goods. But this is equivalent to a growth in the aggregate working capital within the business system, and would naturally provide a satisfactory foundation for an increased provision of working-capital funds by the banks. Conversely, as the volume of business activity declined, the volume of bills would diminish, and the bank would find that the volume of its discounts diminished *pari-passu*.

Granted, then, a state of affairs in which the commercial banks were concerned only with the business circulation, and the liquidity theory became a safe and automatic criterion of bank-

[1] This fact was generally recognized during the banking controversy in England prior to the passage of the Bank Charter Act. It is assumed or discussed in most of the pamphlet literature (particularly by the adherents to the Banking School) and is, perhaps, best presented in Thomas Tooke, *An Inquiry into the Currency Principle* (London, 1844), pp. 33–64, where the distinction between dealer-to-dealer and dealer-to-consumer payments is well brought out.

ing. If bankers confined their operations to discounting bills of exchange and satisfied themselves, in each case, as to the soundness and liquidity of the paper offered by means of an investigation of the names and of the underlying commercial transaction, an overexpansion of credit was impossible. The volume of bank deposits would expand and contract with the needs of business for working capital, which was precisely what was required of the banking system. Only when a banker—or many bankers—departed from the automatic principle of liquidity by lending on finance bills, or against general securities, do we find overexpansion of credit and a consequent collapse.

BANKING CHANGES IN THE NINETEENTH CENTURY

The tradition of the liquidity theory is still heard today—since human beliefs are more viscous than economic institutions—but the conditions that elevated that theory into an automatic principle of bank management have long disappeared. The banking revolution of the nineteenth century, which has up to now received very inadequate theoretical consideration, lies in the fact that a steadily increasing proportion of the population came to possess bank accounts, and to use them for the twin purposes of collecting income and making payments out of that income. The demand deposits of the commercial banking system came to represent not only the business circulation, but a very substantial and growing part of the income circulation. And toward the end of the century the banks in many countries, including the United States, began to receive savings deposits, which belonged to neither the business nor income circulations!

This aggregation of deposit liabilities could not be expected to vary proportionately to the working-capital needs of business. Although the volume of business deposits might still increase and decrease with changes in business activity, the aggregate amount of the income deposits would depend upon such factors as the size of the population and the prevailing level of money incomes, and the savings deposits would depend partly upon the last factor, partly on the thrift of the income receivers, and partly upon changing habits in regard to the best method of conserving wealth.

Nor was the chief problem the lack of equilibrium between bank deposits and the available supply of bills from day to day. The aggregate volume of commercial bank liabilities was steadily growing at a much more rapid rate than the needs of business for working capital, and was bound to do so if bank deposits were to serve adequately as the chief medium of payments in the income circulation—a rôle, it may be noted, that was forced upon demand deposits by the inelasticity of the supply of notes and coins of all kinds. The supply of good bills of exchange was utterly inadequate to absorb the lending power of the commercial banks, and the banker was driven to the practical conclusion that his old criterion of credit policy no longer applied. He began to lend on single-name paper for a variety of purposes, to advance money against real estate mortgages and other securities, even to purchase bonds for his portfolio, and all of these credit operations enlarged the aggregate volume of deposits just as effectively as the discounting of an equal amount of bills would have done.

This development created an important monetary problem, however. Whereas, under the older liquidity theory, an increase of business deposits resulting from expanded industry and trade would presumably not affect the general level of prices, an increase of income deposits under the newer dispensation was very liable to do so unless it was carefully regulated so as not to proceed more rapidly than the growth in population. But changes in population were naturally omitted from the lending criteria of the individual banker, since any such standards could apply only to the banking system as a whole. Instead, the banker continued to make loans and investments on the basis of the credit standing of the borrower and the value of the collateral, without apparently realizing that the quantitative limitation imposed by the older liquidity theory had vanished. The best application of these criteria no longer gave any assurance that a credit inflation would not occur.

Nor was the so-called "shiftability theory" of much use, save as a convenient rationalization of banking practice. In times of rising prices and general business prosperity everything is shiftable, so that the theory imposes little, if any, quantitative restriction upon the expansion of bank deposits. Nor does the most

rigid application, in such a period, of the principle of shiftability preserve the soundness and solvency of the bank in the period of crisis and liquidation that inevitably follows—because, when prices are falling rapidly, no form of asset can be shifted without appreciable loss! Commercial banking had, almost without realizing it, abandoned its earlier principle of operation without finding any satisfactory substitute to take its place, and the resultant uncertainty of banking policy endangered the general monetary stability of the country as much as it endangered the soundness of the banks themselves.

ORIGIN OF CENTRAL BANKS

It was to meet this situation that central banks were developed during the latter part of the nineteenth century and the early years of the twentieth. Such central banks were regarded specifically as institutions for the control of the quantity of bank deposits, and were recognized to be necessary in a financial system where the theory governing operations no longer imposed any quantitative restriction upon the lending activities of the commercial banks.

To be sure, this fact is not always clearly stated in the literature of the nineteenth century, since the writers were primarily concerned with the maintenance and extension of the international gold standard. But it was the maintenance of that standard which gave rise to the need for quantitative credit control. Under the gold standard all forms of money were legally redeemable in gold, and the preservation of this right of redemption implied the maintenance of an appropriate quantitative relationship between the total supply of media of payments and the aggregate gold reserves. While the actual ratio depended on all the surrounding circumstances, and might differ from one country to another, the need for an appropriate relationship in each particular case was apparent.

The "automatic" character of the nineteenth-century gold standard arose directly out of the methods developed by central banks to maintain convertibility. Since notes in circulation and member-bank reserve balances comprise the important liabilities of the central bank, it is apparent that the aggregate amount of

these two items can be altered if the central bank deliberately varies the amount of its assets. Moreover, since in most countries additional supplies of coin and notes get into circulation only when member banks obtain them from the central bank (thereby diminishing their reserve balances), it is the deposits of the latter institution that form the nucleus of credit control.

In summary, then, commercial banks could only expand their deposits when they already possessed excess reserves or knew that additional reserve funds would willingly be supplied by the central bank through rediscount or open-market operations. But central banks were only willing to supply additional reserve funds when their own gold reserves were above normal. Conversely, when gold reserves fell below the normal level, central banks would adopt a policy of contracting their assets, thereby diminishing the reserve balances of commercial banks and engendering a policy of credit contraction. The size of the gold reserve was the central criterion of central-bank policy, and it was this fixation of viewpoint that gave to the pre-war gold standard its comparative simplicity.

This simple criterion no longer exists. During the past two decades gold has been effectively removed from its place as the chief regulator of monetary and banking policy. Some countries have entirely abandoned the gold standard, while others have modified it by complex regulations that deprive the yellow metal of the elemental influence it once exercised. In both cases the result is the same.

While all of the techniques of credit control have been preserved, and even improved, the traditional lodestar of central-banking policy has been deprived of its guiding power. Central banks today, in common with commercial banks, find themselves in a position where their operations are no longer restrained in any quantitative fashion by the traditional standards, and the qualitative aspects of their activity have not yet received adequate attention.

THE BANKING CRISIS AND THE NEED FOR RESEARCH

The brevity of the foregoing analysis has necessitated the omission of many details, but its broad outline may be fruitfully

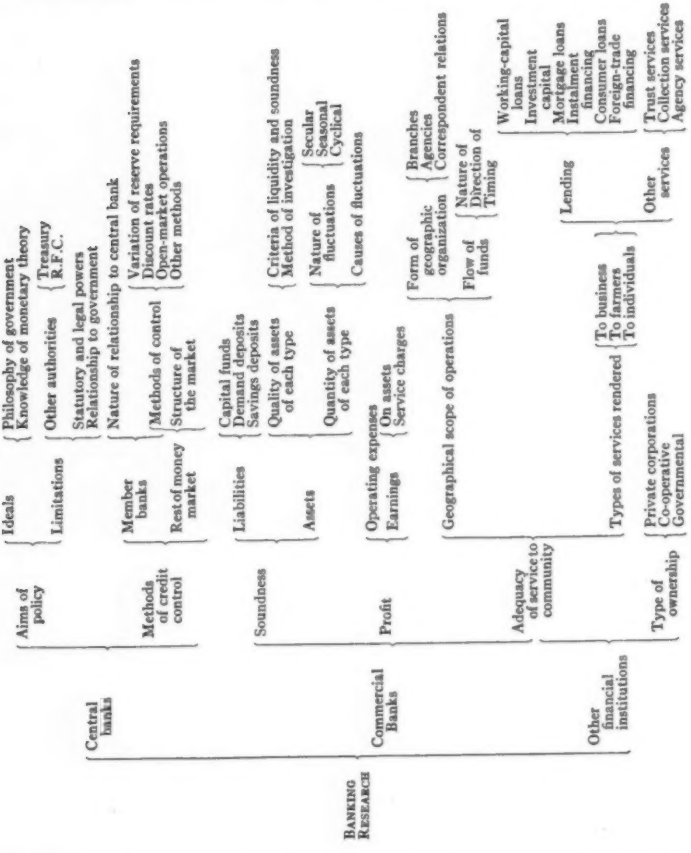
suggestive. The problems that confront us take shape somewhat more clearly, and can be stated in the form of three sweeping questions. First, what should be the quantitative aims of central banking policy and how can these aims be attained? Second, what criteria should govern the distribution of available funds by the commercial banks and other financial agencies, both in regard to quantitative volume and to quality of assets? Third, how can the commercial banking system be made to serve even more satisfactorily as a mechanism of payments?

These broad questions must be subdivided into manageable component parts before a research program can enable us to answer them, and Chart I indicates in a general fashion how this may be done. Naturally the items on the right-hand side of the chart can be still further subdivided—both as to geographic regions and as to particular types of asset—but this is a problem of practical operating detail that would require more space than is warranted in an article of this kind. If the structural framework suggested is satisfactory in its broad outlines Chart I will serve its purpose.

Turning to central-banking problems first, it is apparent that, if we regard central banks as responsible for controlling the quantity of money and supervising the member banks and the money market, there are four groups of problems. In the first place, some decision is necessary regarding our philosophy of government, which may range all the way from extreme state socialism to complete laissez faire. Such a decision is not merely a matter of idle interest, since in the present instance it will tend to govern the relationship of the central bank to the government and will also have important bearings upon the problems created by the existence of such institutions as the Reconstruction Finance Corporation, the F.C.A., and other central financial bodies. Second, there is the problem of studying the exact structure of the money market and ascertaining the precise interrelationships that bind the different types of financial institutions together. Third, it is necessary to study the precise effects of each of the customary weapons of central banking, to analyse the effects that they have upon the market as to both the extent of their influence and the time interval required for that influence to become apparent.

Fourth, in the light of all the information gained by the study of the first three and of our growing knowledge of economic and monetary theory, it becomes necessary to state more pre-

CHART I



cisely the aims of central-banking policy—recognizing clearly the extent to which such aims can be attained and realizing the specific policies that will be necessary to attain them.

In regard to the rest of the financial system, it is well to consider commercial banks and other financial institutions at the same time, since both are engaged in the task of distributing the

available supply of funds in a fashion that most satisfactorily meets the needs of the community. In this case the problems that confront us are much more numerous, but again four general groups can be distinguished.

First, it is necessary to study the quality of each of the various types of assets, finding out specifically for real estate mortgages, commercial paper, etc., the standards that should be set up in order to preserve soundness and liquidity. Such an investigation, moreover, would in each case need to go into the problem of the method by which the banker can ascertain the facts that he needs to know. Second, changes in the quantity of each type of asset (both for specific districts and for the country as a whole) must be studied, and an effort made to describe the secular, cyclical, and seasonal variations—as well as to discuss the underlying causes of such variations. Third, the whole question of the adequacy of the service rendered must be answered. To what extent are adequate facilities available in all sections of the country? To what extent does the financial system adequately meet the needs of the public for each type of credit required—both in regard to the amount of the loan and in regard to the method of granting it? And, fourth, what is the significance of governmental or co-operative ownership of some of the financial institutions with which we are concerned? How do such institutions affect the operations of the commercial banks? Is there any peculiar merit, for certain types of financial operations, in each of the different types of ownership?

Finally, since the commercial banks as such have the peculiar function of operating the mechanism by which most payments are made today, the continued and efficient operation of these institutions has an importance all its own. In addition to the problems suggested above, therefore, it is probable that specific study should be made of the earnings, cost of operation, and profits of commercial banks, recognizing that separate analysis will be necessary for different geographic areas and for banks that differ substantially in size.

CONCLUSIONS

Anybody who studies the scheme summarized in Chart I or who develops another more to his own liking—will be able to

classify the detailed problems in a variety of ways. The classification suggested in the preceding paragraphs is not, in any sense, final, but it does serve to indicate both the magnitude of the problem and the diversity of tasks that must be undertaken if it is to be satisfactorily solved. The practical aspects of research organization arise directly out of the schematic way in which the whole subject of banking research is envisaged, so that the two problems suggested at the beginning of this paper are inextricably related.

Obviously, the general sponsorship of such a study requires the intimate co-operation of the government, the universities, the banking organizations, and the leading business interests of the country. Without governmental co-operation it would be impossible for those engaged in the study to have access to the data and the results of previous research, now in the possession of the Federal Reserve Board, the Comptroller of the Currency, and other departments that have been actively concerned with this problem for many years. On the other hand, if banking and business interests are not actively interested the development of satisfactory solutions will be impossible, since these interests alone can contribute the results of practical experience in the financial field which, as has already been suggested, often differs substantially from the legal framework within which financial and commercial operations are conducted.

Such a comprehensive group of co-operating interests would, however, be too large to engage in the practical task of conducting the research itself. For that purpose a small committee of experts, devoting all of their time to the project, is essential, since the work involves not only the conduct of original investigations but the even more important responsibility of co-ordinating the results of all of the other agencies engaged on segments of the investigation—preventing as far as possible the duplication of effort that is liable to arise, and making available to all agencies the specific results of the work that is being done by each. Moreover, this committee would have to assume responsibility for integrating the results of all of the agencies conducting research in such a fashion that the final conclusions

would present a comprehensive and accurate solution to the major problems.

In reality, the problems of co-ordination are among the most serious practical difficulties of any program of banking research. A glance at Chart I shows that there is tremendous diversity among the several specific subjects that must be studied. A study of involved problems of monetary theory can probably best be undertaken by a single individual, provided that he has a thorough knowledge of the field; an analysis of changes in the deposit liabilities of commercial banks could be undertaken by any well-organized research agency; a study of banking experience with real estate mortgage loans in Oregon could only be undertaken by a committee of active bankers in that state. All of the available agencies would undoubtedly be in a position to make some contribution, but it is apparent that the work that can be done, and is already being done, by banking study commissions in most states is the foundation of any comprehensive program of research. The maintenance of smooth and profitable relations between these state organizations on the one side and the central committee and its satellites on the other is obviously essential, and its attainment is dependent upon a clear recognition of the precise way in which the research agencies are interlocked as well as of the interdependence of the several problems studied.

An article can present little more than a superficial sketch of all that is involved, since the problem is truly Gargantuan. With all the good will in the world, and the continued co-operation of every available research organization, it would take several years to complete the task. It is well, however, that all students interested in the problems of monetary policy and financial organization should give the matter serious thought, since the results envisioned are well worth the effort. Should such a study be undertaken, it would open up the prospect of obtaining an efficient financial and monetary system, providing the information necessary as a basis of legislation, and offering useful criteria of practical operation for the bankers themselves. To attain these benefits, however, much hard work over a long period of time will be necessary, and the demand for immediate results may well imperil the whole plan and sacrifice what has already been done.

SALES ANALYSIS FROM THE MANAGEMENT STANDPOINT—*Continued*

DONALD R. G. COWAN*

THE IMPORTANCE OF CHANGING RATES OF CONSUMPTION AND SALES[70]

IN DISCUSSING the setting of sales quotas a distinction was made between place distribution and time distribution. While the subsequent analyses have dealt mainly with the former, the importance of changing rates of consumption or sales has been given frequent recognition. Regional per capita consumption or sales were confined to a designated year or period for the purpose of eliminating secular influences. It was shown that, for durable goods, the rates of sales and of consumption are not likely to be equal because varying periods of time are required for consumption to take place. The consumptive rates of different consumer groups do not respond equally to changes in prices and business activity. The passage of time also gives rise to changes in selling expense and income with which the management of a marketing organization must reckon in seeking the most profitable combination of business elements. The necessity for continuous adjustment of plans to meet new conditions makes it advantageous to anticipate future changes by analyzing past experiences. It is our purpose, therefore, to suggest and describe some phases of sales planning in which analysis and forecasting may be helpful.

In some industries demand is relatively constant but sales and consumptive rates vary because of changes in supply. In others demand is the controling factor in changing sales rates. As examples of the first class many foods are looked upon as necessities and the need for them is fairly constant. On the other hand, their supplies frequently vary widely from time to time. For instance,

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[70] Part of the subject matter of this section has been taken from the author's "The Commercial Application of Forecasting Methods," *Journal of Farm Economics*, Vol. XII, No. 1 (January, 1930).

the dressed weight of hogs slaughtered decreased from 10,900,000,000 pounds in 1933 to 5,904,000,000 pounds in 1935. With similar changes in the pork supply and with wide variations in supplies of beef, veal, lamb, poultry, eggs, butter, cereals, vegetables, and fruits, the intelligent planning of plant, storage, and selling operations depends upon ability to anticipate how the factors influencing farmers' production will affect the available supplies in future periods. These factors include the long-time shifts in agricultural production and farm practices which, along with demand factors, influence the purchasing power and relative profitableness of producing certain quantities of each product; the changes in profitableness over shorter periods of a few years as manifested by the cycle phenomena of hogs, poultry, eggs, sheep, and cattle, and influenced by the business cycle; the year-to-year influences of acreage, yields, and prices of farm feeds; the seasonal swings which may vary or change slowly from year to year with changing farm practices; and the week-to-week variations in actual market receipts due to temporary weather conditions, farm operations, and the like. Almost all these are capable of some degree of prediction if measures of the underlying causes are available. Detailed description, however, is unnecessary because many interesting studies of these problems have been published.[71] With their aid and with that of government surveys and reports, forecasts of supplies are steadily becoming of greater practical value in business management. By means of various barometers one company, for example, has been able to forecast annual supplies of pork for a number of years with a small average error.

[71] Some examples are listed: Holbrook Working, *Factors Affecting the Price of Minnesota Potatoes* (University of Minnesota Agricultural Experiment Station, Technical Bull. 29 [October, 1925]), pp. 1–31; G. C. Haas and Mordecai Ezekiel, *Factors Affecting the Price of Hogs* (U.S. Department of Agriculture, Department Bull. 1440 [November, 1926]), pp. 10–53; Bradford B. Smith, *Factors Affecting the Price of Cotton* (U.S. Department of Agriculture, Technical Bull. 50 [January, 1928]), pp. 3–56; Harry S. Kantor, *Factors Affecting the Price of Peaches in the New York City Market* (U.S. Department of Agriculture, Technical Bull. 115 [April, 1929]), pp. 1–30; F. A. Buechel, *Wholesale Marketing of Live Poultry in New York City* (U.S. Department of Agriculture, Technical Bull. 107 [May, 1929]), pp. 29–55; Carlos E. Campbell, *Factors Affecting the Price of Rice* (U.S. Department of Agriculture, Technical Bull. 297 [April, 1932]), pp. 1–39.

In relation to the sales program, two groups of these products are distinguishable although no dividing line exists between them: (*a*) perishable products which must be sold promptly on reaching the market, such as fresh fruits, vegetables, and meats and (*b*) non-perishable or processed products which may be stored, such as canned fruits and vegetables, hams, cotton, and tobacco. For the first class speedy handling is of prime importance. Forecasts may be helpful in planning accelerated selling. It is interesting that by short-time predictions of the marketings of Georgia peaches, the Atlantic Commission Company enabled that large chain-store organization, the Great Atlantic and Pacific Tea Company, to plan its advertising of peaches, thereby promoting consumption when the supplies of this perishable food are heaviest. The effect of this co-ordination of effort upon sales volume, rate of stock turn, selling expense, prices, and quality of product reaching the consumer's table was very beneficial.[72]

More and more of the products of the first group are also to be found in the second group because of the development of methods of preservation. The low-temperature freezing of fruits, vegetables, beef, and other meats has added these products to the older group consisting of cured meats, potatoes, wheat, sugar, cotton, tobacco, and many others. There is no doubt about the economic benefit to society of the storage function. By avoiding gluts it enables producers to obtain higher prices for their products. By carrying the surplus to periods of low production it avoids great shortages and maintains moderate prices for consumers. Storage, nevertheless, creates difficult problems in business planning. Ordinarily, for example, about 50 per cent of the hogs produced in the United States are marketed in the four winter months, November to March. The sales of cured pork products, on the contrary, are sometimes heaviest when marketings of hogs are lightest. The sales of hams in July is usually about 60 per cent greater than in January, whereas the marketing of hogs in January is about 60 per cent larger than in July. It is necessary to carry the excess supply from the winter until consumption is

[72] H. A. Baum, "Chain Store Methods of Buying Fresh Fruit and Vegetables," *Journal of Farm Economics* XII (1930), 280–82.

completed in the following summer. Failure to store the proper amount frequently causes serious losses, and makes it desirable to know during the winter storing season how large the summer shortage will be. Consequently it is helpful to forecast not only the probable supply for the year but also its probable distribution between winter and summer.

Many factors affect the time of marketing hogs, such as corn and hog prices and the corn supply both during and previous to the period of marketing.[73] Study of these and other factors have aided in the planning and control not only of the accumulation of storage stocks of provisions and poultry and eggs, but also of their disposal. Selling prices have to be scaled up or down more than present competition seems to dictate. The intensity of the selling drive is determined, and the character, amount, and timing of the advertising campaign are mapped out far in advance according to the available information. Predictions of this nature in 1928 led the Institute of American Meat Packers to conduct an intensive advertising campaign for the purpose of increasing the immediate consumption of ham during the summer so that expected new supplies would not overburden the industry.

Consumption and sales may not coincide with production and supply in a given period. From what has been said about the storing of pork, it is clear that the seasonal variation in its consumption does not coincide with its production. With the exception of the perishable products that pass promptly and in their entirety into consumption, the forecasting of production and of consumption are two different problems. The sales of butter by large distributors provide an interesting example. When the price is highest in the winter months, the sales volume is sustained on account of the heavy out-of-storage movement during that period. Consequently, in budgeting a packing company's monthly sales to be expected at different prices, it is impractical to make estimates based on the usual relationship between monthly prices

[73] S. W. Russell of Swift & Co., "Methods of Forecasting Hog Production and Marketing," *Journal of the American Statistical Association, Proceedings Supplement 165A*, March, 1929, pp. 225–33; A. T. Kearney, *American Management Association* ("Convention Series," No. 59), p. 18.

and total consumption. Along with other factors, however, this relationship holds between yearly prices and the sales of both fresh and storage butter.

The foregoing illustration occupies an intermediate stage between products of which the sales rates are affected by the relatively greater variability of production and those of which the sales rates are influenced to a greater extent by changes in demand. Of course there can be no rigid demarcation between the two groups, and the study of demand should not be neglected in the former. In general, however, services and manufactured products are unlimited in their potential production, but their sales rates depend on demand.

Long-time forecasts of demand are often of real value. For instance, the American Telephone and Telegraph Company predicts its service requirements for a period of years. These forecasts are adjusted annually and the Company's itemized revenue and expenditure as well as its activities are budgeted accordingly. Public utilities, railways, and the like have an unusual opportunity to use long-time forecasts because their services and revenue parallel the growth of population, business, and wealth. Similarly, in meat packing, the construction, purchase, or closing of a plant should be preceded by study not only of the probable local supply of labor, the trend of livestock production, shifts in agricultural and industrial production, but also of local consumption and the market elsewhere for surplus products.

Frequently, a good forecast of the sales possibilities in a given locality may be very helpful. It may be obtained by a thorough study of the trends in population, industries, occupations, and other fundamental characteristics as they relate to the particular business. For example, before making a building loan in a given locality, a realty investment company made local rental surveys involving detailed investigations of rental conditions in specific areas, existing supply of and demand for building facilities in such districts, vacancies and rental rates, and all the other factors which determine the possibilities of a given locality and of a specific project.[74] Other concerns find similar predictions of much

[74] See comments by W. C. Clark of S. W. Straus & Co., *American Management Association* ("Annual Convention Series," No. 59), pp. 8–12.

value in deciding the location, reconstruction, or discontinuation of branch houses and plants. For example, a decision to establish a meat wholesale house at Pontiac, Michigan, an automobile manufacturing center, would depend largely upon forecasts of population, industrial growth, sales of the particular automobiles made there, variability of employment, neighboring agricultural development, and the possibility of more economical trucking from other branch-house cities on account of the extension of paved roads, and competition from other packers. Gradual changes in the size of the family and the number of children, as well as income, are significant factors affecting the consumption of milk and should be considered of vital importance to milk distributors.[75] Forecasts of these phenomena may also be of help in comparing sales growth, and in solving many other local sales-management problems. In reality this is nothing but time forecasting related to a particular location.

Many concerns find their sales very dependent upon the business cycle and the main problem of prediction for them is to find an index, the ups and downs of which precede similar fluctuations in their own activities.[76] For the American Radiator Company, building contracts, building permits, or one of the other indices of prospective building activity enables a high degree of intelligent control over volume, distribution of inventory and selling effort.[77] When a firm's activity fluctuates concurrently with the business cycle, and directly related indices are not readily obtainable for making reliable predictions, the problem of forecasting is not as easy. In building or underwriting construction, for example, commitments follow the award of the contract, and the forecasting problem requires careful study of the general business situation and the factors responsible for changing trends in aggregate national building activity including growth of population, stand-

[75] Warren C. Waite and Charles B. Howe, *The Consumption of Dairy Products in Six New Jersey Townships* (New Jersey Agricultural Experiment Station, Bull. 507 [June, 1930]), pp. 3–28.

[76] J. H. Barber, "Walworth Policies That Stabilize," *American Management Association* ("Sales Executive Series," No. 36), p. 22.

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The statistical determination of regular seasonal variations in demand, prices, and expenses may aid in better sales control and stabilization. One concern engaged in manufacturing radiators found that builders and renters of buildings tend to order their radiator requirements for delivery in the autumn, and, as a consequence, expenses were increased. By reducing or advancing prices according to a preannounced plan, seasonal sales rates were leveled to a very considerable extent, notwithstanding the opposition of competitors. The elimination of great waste was accomplished, and better service was rendered to customers.[81]

There are rival uses for particular products and the conditions affecting demand in each case are subjects for complicated study. At the same time many competitive sources of the same or similar products exist, and the individual firm is interested not only in general tendencies in total consumption but especially in the trends and variations of its own sales in comparison with total consumption. Tendencies in the sales of individual products de-

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viate from those of general consumption on account of differences in quality, marketing channels, merchandising methods, and amounts and quality of selling effort.

Even as the management of each concern seeks the most profitable combination of volume, expenses, and earnings, the lapse of time brings changes in the merchandising and other conditions surrounding the inception of new experiments or policies. Between 1929 and 1933, for instance, the total number of chain grocery and combination (grocery and meat) stores in the United States declined from 52,618 to 49,664, but their proportion of the total grocery- and combination-store sales increased from 38 per cent to 44 per cent. In the same period, the total number of combination stores increased from 17,249 to 24,924, while their proportion of the total combination-store sales increased from 32 per cent to 44 per cent.[82] Under circumstances such as these, results of new policies are likely to be obscure and difficult to measure.

A further obstacle is that sales to jobbers and to retailers may not represent sales to consumers. Perishable products move into consumption promptly but many products are non-perishable and may remain in jobbers' warehouses or on retailers' shelves long after being sold by the manufacturer.

Considerable progress is taking place in meeting these difficulties. The separate and combined sales of competing brands to consumers are being determined on a national scale by comparing the amounts purchased by numerous representative retailers at sixty-day intervals and adjusting for changes in their inventories.[83] With this information available, the individual firm may determine the results of its policies more accurately. For instance a manufacturer's shipments to jobbers, chain stores, and individual dealers may be declining, and, in alarm, an advertising campaign may be undertaken. However, retail sales to consumers may be normal or increasing, and the decline in factory shipments

[82] U.S. Census of Retail Distribution, *Food Retailing* (1929), pp. 66 and 74; and U.S. Census of American Business, *Chains and Independents* (1933), p. 4.

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and total consumption. Along with other factors, however, this relationship holds between yearly prices and the sales of both fresh and storage butter.

The foregoing illustration occupies an intermediate stage between products of which the sales rates are affected by the relatively greater variability of production and those of which the sales rates are influenced to a greater extent by changes in demand. Of course there can be no rigid demarcation between the two groups, and the study of demand should not be neglected in the former. In general, however, services and manufactured products are unlimited in their potential production, but their sales rates depend on demand.

Long-time forecasts of demand are often of real value. For instance, the American Telephone and Telegraph Company predicts its service requirements for a period of years. These forecasts are adjusted annually and the Company's itemized revenue and expenditure as well as its activities are budgeted accordingly. Public utilities, railways, and the like have an unusual opportunity to use long-time forecasts because their services and revenue parallel the growth of population, business, and wealth. Similarly, in meat packing, the construction, purchase, or closing of a plant should be preceded by study not only of the probable local supply of labor, the trend of livestock production, shifts in agricultural and industrial production, but also of local consumption and the market elsewhere for surplus products.

Frequently, a good forecast of the sales possibilities in a given locality may be very helpful. It may be obtained by a thorough study of the trends in population, industries, occupations, and other fundamental characteristics as they relate to the particular business. For example, before making a building loan in a given locality, a realty investment company made local rental surveys involving detailed investigations of rental conditions in specific areas, existing supply of and demand for building facilities in such districts, vacancies and rental rates, and all the other factors which determine the possibilities of a given locality and of a specific project.[74] Other concerns find similar predictions of much

[74] See comments by W. C. Clark of S. W. Straus & Co., *American Management Association* ("Annual Convention Series," No. 59), pp. 8–12.

value in deciding the location, reconstruction, or discontinuation of branch houses and plants. For example, a decision to establish a meat wholesale house at Pontiac, Michigan, an automobile manufacturing center, would depend largely upon forecasts of population, industrial growth, sales of the particular automobiles made there, variability of employment, neighboring agricultural development, and the possibility of more economical trucking from other branch-house cities on account of the extension of paved roads, and competition from other packers. Gradual changes in the size of the family and the number of children, as well as income, are significant factors affecting the consumption of milk and should be considered of vital importance to milk distributors.[75] Forecasts of these phenomena may also be of help in comparing sales growth, and in solving many other local sales-management problems. In reality this is nothing but time forecasting related to a particular location.

Many concerns find their sales very dependent upon the business cycle and the main problem of prediction for them is to find an index, the ups and downs of which precede similar fluctuations in their own activities.[76] For the American Radiator Company, building contracts, building permits, or one of the other indices of prospective building activity enables a high degree of intelligent control over volume, distribution of inventory and selling effort.[77] When a firm's activity fluctuates concurrently with the business cycle, and directly related indices are not readily obtainable for making reliable predictions, the problem of forecasting is not as easy. In building or underwriting construction, for example, commitments follow the award of the contract, and the forecasting problem requires careful study of the general business situation and the factors responsible for changing trends in aggregate national building activity including growth of population, stand-

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may reflect merely the desire of retailers to reduce inventories at certain periods. Furthermore, the effect of the advertising, from the date of its inception, may be determined by comparing the sales trend of the brand in question with those of other brands or by determining the trend in the particular brand's proportion of total consumption. Its effectiveness in different areas may be compared and the time at which it begins to lose its force may be discovered. Frequently additional advertising is met by the opposing campaign of competitors, and the comparative progress of the different brands may indicate how subsequent campaigns may be improved. In similar fashion, also, the results of salesmen's campaigns, price changes, and new merchandising plans may be studied. Comparisons with general indices of advertising,[84] prices, and purchasing power are being undertaken. Where necessary, in these studies, greater exactitude of measurement awaits the application of more refined analytical methods whereby numerous conflicting secular influences may be held constant in order to reveal more clearly the tendency in question.

In conclusion, it is obvious that the setting of regional sales quotas should be preceded by the determination of a total sales goal or budgetary quota for the whole marketing organization, based on the probable supply, demand, prices, effort, and merchandising policies of itself and competitors, in so far as these can be predicted from present knowledge. Furthermore, the breakdown of this budget by sales territories should take into consideration not only the relative possibilities but also the secular trends and changes likely to take place in each area, including any adjustment to be made in selling effort and in policies of management. In order that the final quotas may be accepted as reasonable by all concerned, preliminary estimates may be obtained from salesmen and their supervisors, and, through subsequent discussions, may be made to harmonize with statistical measurements as closely as may seem practicable. To the extent that these predictions are understood and accepted by the sales or-

[84] L. D. H. Weld, "Advertising Index. I," *Printers' Ink*, January 10, 1935 (continued monthly).

ganization, and eventually prove to be correct, quotas are effective as a marketing device.

SUMMARY AND CONCLUSIONS

The abandonment of the practice of merely assuming that certain market factors indicate regional sales potentials marked the end of the deductive method in market planning. The application of a scientific technique in setting sales quotas brought about a more balanced procedure through the combination of both deductive and inductive methods of analysis. Ideas could be subjected to the test of reality. Experimentation, in turn, brought to light new problems for investigation and led to many far-reaching studies of consumption and sales phenomena. The central purpose of the preceding discussions has been to describe some aspects of these phenomena, as revealed by economic analysis, keeping in mind their relation to the planning of a sales program.

Rather simple studies of the tendencies in the geographic distribution of individual products, undertaken at first for quota-setting purposes, have broadened as the work progressed and new complexities arose until a whole set of economic analyses aimed at the planning of sales programs were set forth. The evolutionary development of these studies over a long period indicates the constantly changing nature of market relationships. For that reason it seemed more fruitful to pass from their simple aspects to those of greater complexity rather than to follow a chronological order of presentation.

At the outset it was found that the per capita purchases of an important service are closely associated with the corresponding geographic variations of seven factors and seem to be causally dependent on at least four of them. Many similar geographic series of total purchases of services and goods, including telephones, radios, magazines, oleomargarine, and automobiles are each related in their own peculiar way to groups of variables reflecting the relative geographic importance of the characteristics of different population groups and other phenomena. That is to say, income variation and other factors affect differently the geograph-

ic distribution of the major classifications of services and goods. For this reason the so-called general buying power indices are of limited value. Even the relationships of regional price differentials to the consumption of many products are of the demand-curve pattern and require individual study.

From these measured tendencies in the geographic distribution of each good or service it is possible, by interpolation and extrapolation, to calculate the per capita consumption of each product for different population groups. The method varies according to whether the group's characteristic is quantitative or qualitative. Besides other illustrations there are the interesting relationships between the regional consumption and prices of various food products which may be termed geographic demand curves. Many qualifications, however, are necessary in order to give these measurements practical value in planning a sales program.

There must be a more definite understanding of the characteristics of the services or goods in question than is conveyed by the terms "food," "clothing," "gasoline," or what not. Analyses of the component items in some of these major classifications show that their geographic variations are affected in different direction and degree by each market factor, according to the special characteristics of each service or product. Circulation of weekly newspapers is relatively more important in rural areas than in cities, while the opposite is true of daily and Sunday papers. Different magazines, even though emanating from the same publisher, are not accorded equal favor in every area. Automobiles in the low-price class bear less relationship to geographic income variation than those in the higher-price classes. This is important since the market possibilities outlined in a sales program relate more to particular services or products and less to the broad classifications to which each may belong.

For perishable and semiperishable goods the time lapse between sales and consumption is negligible, and their rate of sales is identical or nearly identical with their rate of consumption. No special difficulty is created by the period of time implicit in their rate of consumption. On the other hand, the varying lapse of time necessary before durable goods pass completely out of use makes it difficult, if not impossible, to state definitely the rate of consump-

tion by a group of purchasers. Of course, estimates of the probable number of automobiles, radios, or other durable goods possessed by a group of consumers within a given period of time would doubtless be helpful to the sales management of concerns producing them. Similarly, the probable rate of sales to different classes may be useful. When new durable goods are added to those in different stages of obsolescence, as illustrated by total yearly automobile registrations by states, more complicated analysis gives an interesting indication of the comparative rates of obsolescence for different groups of users. To avoid the difficulty of time lapse between sales and consumption, the remainder of our studies were confined mainly to perishable products.

The rate of consumption applies only to a stated period. The lapse of time brings changing rates for different periods because it gives play to dynamic influences such as changing business activity, income, prices, and many others. By repeated measurements of the rate, the consumption response of different classes of buyers to these influences may be approximated and compared. For example, some indication of the elasticity of demand of different groups may be obtained. In planning the sales program these studies give some knowledge of what regional market factors will be more stable, what areas may witness closer conformity of sales to business conditions and employment, what groups may respond more to price changes, and other important information.

While the rate of consumption of a standardized, branded product may be studied as one of the component elements in a more general rate, the special characteristics distinguishing it from the brands of competitors are not the only reasons why different consumer groups may buy it in different proportions than other brands. Variations in the mode of marketing and merchandising, the quantity and character of the selling effort, and the pricing policies may affect regional-group consumption. From the standpoint of planning, therefore, the sales executive is more interested in studying the exact effect of regional-market factors upon the distribution of his own brand than upon the general class of products to which it belongs, although the latter pursuit may also be helpful. Very often he must rely solely upon the analysis of his own sales for a knowledge of regional-market tendencies, because

more general data such as may come from a census of distribution are frequently lacking, incomplete, erroneous, or based on too many heterogeneous products. Even a trade association may encounter much difficulty in assembling the total sales of similar competing brands not only because its members are often loath to release such confidential information but also because their sales areas do not coincide well enough to make accurate regional aggregates possible.

Perhaps the most important reason for the analysis of sales rates is the knowledge it gives a sales executive of the relationship of his own products, marketing methods, effort, and prices to the distributive agencies and consumer groups in the market. In fact, all of these phases of planning are regional-market factors which influence sales rates and which at the same time are largely determined by the more or less conscious direction of the sales management. Each in itself is a complexity of economic tendencies requiring to be analyzed for intelligent planning.

The merchandising conditions encountered by the marketing organization affect the comparative sales rates in different regions. Competition, for example, is not as haphazard as it may appear but is subject to definite tendencies. The importance of different channels of distribution varies under the influence of certain regional conditions. Hence the policy of a manufacturer in meeting competition or in dealing with chain stores and other outlets will influence his sales rates to differently situated consumer groups.

The simplest way in which management affects the rate of consumption of a product, as well as of groups of related products, is through the amount of sales effort directed into each area. Variation in the number of salesmen and their ability causes a large measure of the variability in per capita sales and gross income. A limit to the expenditures for salesmen's effort is found in the ever present tendency to diminishing returns and the unprofitableness of extending these expenditures beyond the point of balance by the income directly attributable to the salesmen's effort. Variation in regional selling effort affects the per capita sales of some products more than others.

Sales rates, as well as selling prices, are affected by the selling effort exerted through the dissemination of advertising. Relative

to population, national advertising in magazines varies regionally and yields diminishing returns. The measurement of these returns, however, is complicated by the cumulative effect of advertising. Each magazine is a product for sale and its circulation to different consumer groups depends on how its characteristics appeal to them and to what extent the publisher promotes circulation. Consequently, the advertising reaches some types of consumers to a greater extent than others. In sales planning it is important to analyze national media and choose them carefully so that the advertising may be directed to influence sales rates and gross margins most advantageously. Local advertising, which also yields diminishing returns, may be subjected to greater directional control, based on the results of analyses showing that consumer groups and regions react more to it. There is some evidence that, when sales management co-ordinates both advertising and salesmen's effort, their joint effect is greater than the aggregate of their normal separate effects.

The results of selling effort are modified by the management's choice of trade channels. For example, when the salesman is directed to the greater solicitation of large dealers the sales volume and net profits are larger, notwithstanding smaller gross margins. Other benefits also accrue such as the gradual increase in concentrated retail buying and the greater integration of the marketing channels.

The types of retail dealers chosen for greater solicitation also affect selling results and the sales rates of some products more than others. In turn the choice of products to be sold as a group has a direct bearing upon the types of dealers to be solicited. As a consequence, these products have different selling expenses and require different gross margins to cover these expenses. The selection of new products and their addition to the line of products already handled for the purpose of increasing sales rates requires great care because diminishing returns may result.

The function of sales management is to co-ordinate the various tendencies, regional and secular, in expenses and income in such a manner as to maximize net results in each area. Salaries, wages, and other expenses tend to be higher in urban areas and necessitate larger volume per branch. The elasticity of unit expenses

depends upon the proportion of fixed and variable expenses in each selling unit.

When geographic prices are allowed to vary with natural economic conditions, as in the case of some food products, the margins left after deducting transportation charges from producing regions are inversely related to the regional sales rates. But neither the level of margins nor changes in them are clearly related to changes in regional sales volume. Harmonizing with this is the distinct tendency for high or low margins as well as high or low sales rates to tend to regress to average. This tendency is perhaps explained by the attractiveness of high margins and rates to new competitors, and by the tendency for competitors to withdraw under opposite conditions. However, analysis shows that some consumer groups react to price changes more than others. Further, knowledge of these tendencies would be helpful in sales planning and would reinforce the efforts to obtain higher margins and larger volume by employing more salesmen, circulating more advertising, and selecting different retail channels. The success of management in maximizing results for each sales unit depends on the co-ordination of the elasticity of unit expense in relation to volume and of volume in relation to price. It will have a different impact on sales rates in each area.

These manifold influences upon the rates of consumption—the character of the product, the predilections and purchasing power of consumers, the marketing and merchandising conditions encountered between producer and consumer, the modifying forces of different kinds of directed effort, and the prices asked—are interdependent. The rate of consumption, therefore, is both an element in their combination and a result of it. Management, in aiming to combine these influences in such a manner that the net results will be a maximum in each area, must modify each combination continually to meet the ever-changing conditions arising with the march of time. In this the prediction of secular changes of all kinds has an important place from the standpoint of both the consumer and the marketing organization. From both the individual and the social points of view, therefore, economic analysis is of first importance in the intelligent planning of every aspect of the sales program.

LIMITATIONS

At every stage of these studies the conclusions are subject to limitations. The original data upon which they are based have been taken from many sources and may not always be reliable and comparable, notwithstanding attempts to make them so. Mistakes may have been made in expressing some series in logarithms although visual and other tests seemed to indicate their their applicability in each case.

The coefficients of correlation obtained are merely expressions of apparent association and not proofs of the existence of causal relationships. The coefficients of partial and part correlation and the corresponding coefficients of determination, although mathematically logical, may suggest associations or relationships which defy the imagination to comprehend, or may draw forth fictional explanations. The probable errors and standard errors of these coefficients have not been expressed because of their inapplicability to the data analyzed. The writer has been fully aware of this limitation and has relied on more general conclusions based on finding certain tendencies repeated for different products, different organizations, different times, and the like, in as far as it was possible for him to do so.

In making estimates with multiple factors, the weight assigned to each factor by the solution of normal equations is partly dependent on the number of factors when these factors are only partially independent of each other. Consequently, decisions based on these weights must be tempered by judgment. Extrapolation has been used at several points because of its practical usefulness. The author realizes that the practice has no logical or scientific basis.

An important limitation is the extensive use of data relating to one type of marketing organization. Theoretically, the conclusions arising from their analysis apply only to that type. Lacking similar analyses in other organizations, only judgment may dictate how applicable to them the findings may be.

Further investigations in many directions are indicated and may temper the results of those already made. Finally, the conclusions are colored by the author's own limited experience and outlook.

THE RISE OF A NEW METAL: THE GROWTH AND SUCCESS OF THE CLIMAX MOLYBDENUM COMPANY

PAUL B. COFFMAN*

THE SEARCH FOR GOLD

IN THE latter part of the nineteenth century prospectors searched for gold on Bartlett Mountain, but they found only a black mineral substance which for many years was thought to be graphite. Early in 1905 Mr. Hugh Leal, a Nebraska banker, through one of his prospector depositors, became interested and after some investigation took up five lode claims. These he and a few others patented on March 1, 1905. Subsequently they became the basis of the present enterprise at Climax, Colorado.

From March, 1905, the property lay idle until December, 1911, when Leal began to drive a tunnel. He really hoped to find gold by intersecting the vein from which that metal had originated some fifty years before in McNulty Gulch. Such hopes, however, proved barren. In the fall of 1915 Leal met Mr. E. G. Heckendorf, of Denver, Colorado, who acquired an option on the five lode patented claims in October, 1916. In trying to interest people in their option Heckendorf and his associates called at the offices of the American Metal Company, Limited, in Denver.

Mr. Max Schott, then western manager of that company, after securing some additional information on the properties, took over the option. A syndicate was formed in which the American Metal Company, Limited, took 10 per cent and Schott and his associates, mostly officers and employees of the metal company, took the remainder. These men proceeded on the idea that they were dealing with a raw prospect which showed indications of intensive mineralization; they hoped it might develop into a low-grade molybdenum deposit.

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The physical properties which molybdenum imparted to steel were known to the steel industry, but no attempt had been made to develop them commercially. The principal reason for this was that no property existed which could be depended upon to furnish a sufficient supply of the element. In the judgment of the syndicate Bartlett Mountain contained an ample ore body.

THE CLIMAX MOLYBDENUM COMPANY

The syndicate, therefore, immediately proceeded to exploit the ore deposit. A few crosscut tunnels were driven by hand. These showed the continuation of the mineralized area and remarkable uniformity of the ore. This additional discovery and a contract for the production of molybdenite concentrates, which had been made with the Electric Reduction Company in Washington, Pennsylvania, led the syndicate to incorporate. Thus in 1917 the Climax Molybdenum Company was formed with Max Schott as general manager.

A mill was built and a power line was surveyed and installed. With the aid of power drills the development of the property proceeded at a rapid pace and proved the further extension of the mineralized area. The mill was operated from March, 1918, to March, 1919, when the contract expired. It had been realized that the operations would not be permanent as the demand was of a temporary nature created by the war. This temporary need for the metal, however, afforded Climax an opportunity not only to develop its property but also to work out some of its metallurgical problems on a commercial scale.

When the temporary demand for molybdenum faded away, the group who had struggled to organize the company initiated their long uphill campaign of developing a market for molybdenum. While the mill was idle they co-operated with people in the steel industry with the hope of ascertaining how molybdenum could be used to greater advantage. These efforts were productive of some good results. The mill was reopened in 1924, but production remained relatively small and the business rather unprofitable.

Mr. Schott, who had been away from the company since 1920,

became its president in 1931. Shortly thereafter a research laboratory was set up in Detroit and a long series of experiments was begun to find new uses and to create a demand for the metal. The two principal results of these efforts were: (1) a prospect was developed into the world's largest known molybdenum mine, and (2) a so-called rare metal, which had practically no commercial applications before 1916, is today becoming an important alloying element for steel and iron.

It is estimated by the United States Bureau of Mines that the Climax Molybdenum Company produces between 75 and 85 per

TABLE 1*

MOLYBDENUM (ELEMENT) CONTAINED IN CONCENTRATES PRODUCED FROM THE CLIMAX DEPOSIT, COLORADO 1918–35†

Year	Pounds	Year	Pounds
1918	342,200	1929	3,529,295
1919	152,648	1930	3,083,000
1924	156,935	1931	2,644,399
1925	821,757	1932	1,913,395
1926	1,057,367	1933	5,028,695
1927	1,858,228	1934	8,378,683
1928	2,957,845	1935	10,168,000

* Sources: production 1918–34, incl., *Minerals Yearbook, 1935*, p. 487; 1935 figure, *Standard Corporation Records*, p. 1984.

† None produced from 1920 to 1923 inclusive.

cent of the world's supply of molybdenum. The ore, which produces concentrates carrying 85–90 per cent of the MoS_2, is low grade, yielding an average of seven to eight pounds of molybdenum per ton. By the end of 1936 the management expects to have eight mills operating and twelve hundred men employed. This will bring the total capacity up to ten thousand tons of ore per day, placing the company in the group of the large mining operators in this country.

Table 1 indicates the growth in the company's production since its incorporation. The steady growth in consumption is due to an increasing world-demand. In 1935 approximately three-fifths of the company's output of concentrates was exported; the remainder was shipped to the plant at Langeloth, Pennsylvania, primarily to be converted into calcium molybdate and ferromolybdenum for consumption in this country. Although there

has been little information available in regard to the actual quantities taken abroad, press releases indicate that France, Germany, Belgium, and England have been fairly large consumers. Although there are several applications of molybdenum in materials used for armament, and although the early development of the mine was the result of a demand for these purposes, at least 70 per cent of the consumption of the metal today is for regular peacetime applications.

SOURCES OF MOLYBDENUM

One of the scarcer elements, molybdenum is considered by H. S. Washington[1] to be about thirty-sixth in quantity among the elements found in the earth's surface. It forms two commercially utilized minerals: molybdenite, a black sulphide resembling graphite, which is usually found in flakes but sometimes in crystals which cleave readily into flexible leaves; and wulfenite, a lead molybdate, which is usually found in thin, flat, translucent yellow plates.

Molybdenum has been found in a number of states in this country, but only in small quantities. The states wherein deposits having commercial possibilities have been found include Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, and Vermont. Mining and milling operations are being conducted in New Mexico and Arizona, the largest operations outside of the Climax Molybdenum Company being at the mines of the Molybdenum Corporation of America at Questa, New Mexico, and the Arizona Molybdenum Corporation. At the Questa mine there occurs a fairly high quality ore, much higher than the ore at the Climax mine; but the reserves of the Molybdenum Corporation of America cannot compare with those of the Climax Molybdenum Company.

Although about 85 per cent of the world's supply of molybdenum is produced in the United States, there are a few relatively large properties in foreign countries. The following countries have known supplies: Australia, China, Canada, Kenya, Mexico, Morocco, Norway, and Russia. Australia at one time produced

[1] *Minerals Yearbook, 1932–33*, p. 260.

about the only metal used in the world, but the reserves were limited and, due to irregular demand, production was sporadic. Mexico has many known occurrences and, according to the Bureau of Mines, gives promise of being the largest producer outside of the United States.

The largest producer in Mexico is the Cananea Consolidated Copper Company at Cananea, which is producing a molybdenite having less impurities than any other on the market today. This molybdneum could not be profitably recovered, however, if it were not for the copper which is found in the ore. Despite the known deposits in foreign countries, it is likely that the Climax Molybdenum Company will supply a majority of the molybdenum for the world's needs for a considerable time to come.

THE DEVELOPMENT AND USES OF MOLYBDENUM

The metal was first isolated by P. J. Hjelm in Sweden in 1782 during the great development in chemistry.[2] But successful utilization of the mineral required many years of experimentation and a great advance in metallurgy. Early experimenters always attempted to use molybdenum in the same manner as tungsten, but they had only a little success. About 1924, however, Climax, by deviating from the beaten experimental path, discovered that fractional amounts of molybdenum added to steel toughened it just as additions of nickel and vanadium did.[3] At about the same time it was brought to public attention that adding calcium molybdate to the bath was an economical method of introducing molybdenum into steel. By this method practically all the mineral is absorbed; the calcium goes into slag.

Molybdenum has a unique effect on steel which makes it possible to improve its physical properties with a minimum increase in expense. Moreover, molybdenum steels have made a good record in reducing fabrication costs, the latter in many instances being a greater factor in reducing the over-all production costs than the lower price of the steel. The reduction has come at many points—in heat-treating, forging, carburizing or nitriding, machining and welding. It is said that molybdenum steels are more

[2] *Ibid.*, p. 261. [3] *Ibid., 1934*, p. 418

economical to forge and roll, that they are more easily machined and therefore effect savings in production costs, and that they cut costs in surface-hardening operations, either carburizing or nitriding. Moreover, molybdenum makes steel respond more uniformly to heat treatment. At the same time it makes all phase changes more sluggish. Furthermore, it is the only commercial alloying element that does not interfere with welding.[4]

Small amounts of molybdenum added to iron increase the tensile and transverse strength, endurance limit, and hardness, improve the high-temperature properties of gray cast iron, and apparently do not lower machinability. The quality of the final product is progressively improved with a better base iron. Generally the effect of molybdenum upon iron is to increase the tensile, transverse, fatigue, and impact strength. It increases the Brinell hardness and at the same time improves machinability for the same hardness number. It also increases the resistance to abrasion and wear.[5]

The use of molybdenum in cast iron is growing rapidly because of a substantial demand in the automotive and machine tool fields. The increase is due to the improvement in wear resistance and toughness of cast iron.[6] Most other alloys are either one- or two-way acting, according to a statement made in the *Iron Age*, whereas molybdenum acts three ways in cast iron in that it affects directly or indirectly its three principal components.[7]

Molybdenum modifies the size, shape, and distribution of the graphite particles, which are smaller, more rounded or curved, and more uniformly distributed throughout the structure than in simple iron. Large interfering flakes are completely absent. It strengthens the ferrite or carbonless portion of the iron structure due to the solution of molybdenum in ferrite. It further strengthens the metallic matrix, since the complex carbides which are also

[4] *Molybdenum in Industry*, published by the Climax Molybdenum Co.

[5] Gottfrid Olson, "Alloys in the Ferrous Foundry," *Iron Age*, CXXXIV (October 25, 1934), 32.

[6] J. Kent Smith and E. R. Young, "Molybdenum in the Iron Foundry," *Iron Age*, CXXX (August 25, 1932), 292.

[7] Olson, *op. cit.*

formed are stronger and better disseminated in it than are normal carbides. The complex molybdenum-iron-manganese carbides result in a finely divided feathery pearlite tending to be sorbitic, more stable, more uniformly distributed, and covering a large portion of the whole area than do the carbides in an unalloyed iron.

Interest in the use of molybdenum in the steel industry has greatly increased since 1932. Partial evidence of this is found in the number of applications for patents and of articles published in regard to the use of molybdenum. It is said to be the one alloy metal used in steel which does not interfere with welding. Some claim that it is helpful in welding. As early as 1930 about 250,000 tons of steel containing molybdenum were used annually in parts to carry high stress, such as axles, connecting rods, steering spindles, aircraft fuselages, in case-hardened parts such as roller bearings, gears, camshafts, wrist pins, in large objects requiring extra toughness and uniformity like crankshafts, hammer rams, die blocks, gun tubes, and in other items such as corrosion resistant sheets, soft steel for deep pressing, and hand tools.[8] Moreover, its use in tubes for building airplanes is increasing, and one of the leading American railroads is making a trial use of rails containing molybdenum. It is said that rails so treated will last over twice as long as rails produced under the usual methods.

The continuous effort to make iron and steel resistant to the effect of weather, friction, and chemicals used and encountered in various commercial and industrial enterprises, and at the same time to permit the various alloys to retain their natural advantages, has brought forth a number of new products carrying molybdenum. Moreover, molybdenum is probably the only steel alloy the domestic production of which exceeds consumption. This fact, obviously, has considerable significance in peacetime as well as in wartime.

Although the uses for iron and steel are the most important, a number of applications have been developed for the molybdenum metal itself. These include lead in wires for incandescent

[8] E. E. Thum, "Molybdenum Steels Gaining Favor," *Iron Age*, CXXV (January 9, 1930), 141.

lamps, sheet in radio and X-ray tubes, and wire and ribbon for heating elements in small furnaces. These applications are made possible by the extremely high melting-point of molybdenum (about 4750° F.).

Other important applications of molybdenum in various forms not connected with the steel industry are: as a catalyst in the hydrogenation of coal and in the vapor phase oxidation of various hydrocarbons, and as an ingredient in pigment lakes for making the pigment more resistant to fading when exposed to light.

TABLE 2*

MOLYBDENUM ORE AND CONCENTRATES, FERRO-MOLYBDENUM, MOLYBDENUM METAL AND POWDER, CALCIUM MOLYBDATE, AND OTHER COMPOUNDS AND ALLOYS OF MOLYBDENUM IMPORTED FOR CONSUMPTION IN THE UNITED STATES, 1925–34

Year	Molybdenum Content (lbs.)	Value
1925	2,228	$ 2,977
1926	14,001	12,162
1927	14,198	16,184
1928	576	1,385
1929	1,627	2,384
1930	144,963	283,846
1931	210,766	213,660
1932	44	89
1933	670	601
1934	213,928	124,156

* Source: *Minerals Yearbook, 1935*, p. 486.

IMPORT TARIFFS AND COMPETITION

With the exception of 1930 and 1931, only minor quantities of molybdenum in any form have been imported into this country. The average value in those two years, respectively, was $1.96 and $1.01 per pound. The price indicates that the imports consisted mainly of metallic Mo or chemically pure salts in various forms. Table 2 presents the trend of imports and their value from 1925 to and including 1934.

The negligible amount of imports may be attributed primarily to the fact that the reserves are fairly limited in the various foreign countries, and fairly large in this country, as already

noted, and secondarily to a tariff which the Tariff Act of 1930 placed upon molybdenum and molybdenum compounds. The tariff on the ore or concentrates, depending upon its Mo contents, is thirty-five cents per pound; on compounds it is fifty cents per pound and 15 per cent ad valorem; on ingots, shot, bars, or scrap it is 50 per cent ad valorem and on sheets, wire, or other forms it is 60 per cent ad valorem.[9]

The production of molybdenum in Mexico, Morocco, and Norway, together with that of other small producers who may be induced to begin mining molybdenum ore during the apparent prosperity of the business, may within a year or two, according to the Bureau of Mines, Department of Interior, cut severely into the foreign trade of the American producers. The growing trend of the world as well as domestic demand, however, will probably partially, if not fully, offset such possible increase in competition in foreign markets. Table 3, which contains statistics on the world-production of molybdenum concentrates for the four years 1931, 1932, 1933, and 1934 clearly indicates that the United States is the premier producer.

TABLE 3*

WORLD-PRODUCTION OF MOLYBDENUM CONCENTRATES

1931–34

(Metric Tons)

Country	Mineral	1931	1932	1933	1934
Chosen	Molybdenite	23.9	44.7	105.2	†
Mexico	Molybdenite	†	†	†	795‡
Norway	Molybdenite	223	329	414	265.4§
United States	Molybdenite	2,756	2,165	4,832.5	7,913.3
	Wulfenite	.....	.....	19.1	359.2

* Source: Figures for 1931 and 1932, *Minerals Yearbook, 1934*, p. 430; figures for 1933 and 1934, *Minerals Yearbook, 1935*, p. 488.

† Data not available. ‡ Estimated. § Exports.

CLIMAX MOLYBDENUM COMPANY'S OPERATING RESULTS, ORGANIZATION, ETC.

That the development of new uses for molybdenum has accrued to the benefit of the Climax Molybdenum Company since

[9] U.S. Tariff Commission, *Comparison of Tariff Acts*, pp. 38 and 45.

1931 can easily be seen by perusing its income statements. Gross income from sales which amounted to $1,463,198 in that year, with the exception of a slight dip in 1932, increased steadily until it totaled $6,346,906 in 1935. The cost of sales, administrative

TABLE 4*

CLIMAX MOLYBDENUM COMPANY—STATEMENTS OF INCOME AND EXPENSE, 1931–35

Accounts	1931	1932	1933	1934	1935
Gross income from sales	$1,463,198	$1,322,471	$3,131,302	$3,952,190	$ 6,346,906
Gross cost of sales	997,171	867,947	1,729,395	1,496,048	2,292,480
Selling profit	$ 466,027	$ 454,524	$1,401,907	$ 2,456,142	$ 4,054,426
Administrative expenses	75,565	70,664	148,400	168,982	195,193
Net income before depreciation and depletion	$ 390,462	$ 383,859	$1,253,507	$ 2,287,160	$ 3,859,233
Depreciation and depletion, taxes, etc.	152,794	161,427	146,488	172,866	264,794
Net income from operations	$ 237,668	$ 222,432	$1,107,019	$ 2,114,294	$ 3,594,439
Other income	14,932	10,282	11,916	12,173	18,941
Total income for the year	$ 252,600	$ 232,714	$1,118,935	†$2,126,467	‡$3,613,380
Provision for federal income taxes	§	§	82,066	205,255	378,113
Reserved for employees' welfare fund	§	§	.....	35,000	.....
Total	§	§	$ 82,066	$ 240,255	.....
Net earnings available for charges	$ 252,600	$ 232,714	$1,036,869	$1,886,212	$3,235,267
Interest paid on 6 per cent Debenture Income Notes	143,209	143,209	138,319	95,610	7,500
Net earnings available for dividends	$ 109,391	$ 89,505	$ 898,550	$1,790,602	‖$3,227,767
Dividends paid in cash	.....	.....	168,000	168,000	1,743,000
Balance after dividends	$ 109,391	$ 89,505	$ 730,550	$1,622,602	$1,484,767
Earned per old share	$ 0.13	$ 0.11	$ 1.07	$ 2.13	$ 3.84
Earned per new share	0.04	0.03	0.36	0.71	1.28

* Source: Annual Reports of the Climax Molybdenum Company.

† After deduction of $114,080 paid to officers and employees as additional compensation.

‡ After deduction of $135,000 paid to officers and employees as additional compensation.

§ Apparently included in "Administration Expenses."

‖ Exclusive of depletion of discovered increment.

expenses, and depreciation and depletion increased less than proportionally while the other important item of expense—namely, interest on funded debt—decreased substantially. Hence, net income from operations increased from $237,668 to $3,594,439.

As business became more profitable a reserve had to be set up for income taxes. In 1934 the management also established a reserve for the employees' welfare amounting to $35,000 and in-

creased it to $50,000 in 1935. The charter provides that 10 per cent of the net earnings not to exceed $150,000 can be paid as bonuses to the officers and employees. Bonuses of $115,000 and $135,000 were paid in 1934 and 1935, respectively.

Although many companies were going from large losses in 1931 to substantial profits in 1935, the depression record of the Climax Molybdenum Company may still be considered one of the more outstanding in the country. The statements of income and expense over the years under consideration are presented in Table 4.

Table 5 presents the various expenses and deductions from income in percentage of gross sales equaling 100 per cent. These figures indicate that there is a tendency for cost of mining and selling to go down as volume of production and sales goes up. This seems to be reasonable in view of the fact that the company's plant has the most modern equipment. Moreover, the company has been expanding its plant to take care of increased production on a more efficient basis: in 1931 its capacity was two thousand tons of ore a day; by the end of 1936 it is expected that the company will be mining and milling ten thousand tons per day. The result of increased production with lower cost is an excellent profit margin even for a mining company.

In spite of the great increase in the company's organization since 1931, the percentage of total administrative expenses has decreased as a result of the increase in sales. Paying the notes off caused the fixed charges to decline to a negligible amount. The depreciation and depletion charges have shown a substantial decline in terms of percentage of gross sales. In connection with these charges, however, it must be observed that the company up until 1935 had capitalized only a small portion of the value of the ore reserves represented by discovered increment. The net earnings available for dividends increased from 7.47 to 50.85 per cent of gross sales—a high figure for any company and a rather unusual record during a period of depression.

Presumably the large gross profit was made possible by reasonably high prices and fairly low costs. But the prices of the various grades of molybdenum have been declining. In 1918, on account of war conditions and metallurgical and flotation problems inci-

dental to the development of proper production methods, the price was five dollars per pound. From 1919 through 1924, when the mine was shut down and there was no appreciable demand, the price remained stable at two dollars per pound. Then the price continued its decline, reaching in 1932 the level of ninety-five cents per pound for ferromolybdenum and eighty cents per

TABLE 5*

STATEMENT OF INCOME AND EXPENSES, 1931–35 INCLUSIVE
(Gross Sales = 100 Per Cent)

Accounts	1931	1932	1933	1934	1935
Gross income from sales	$1,463,168	$1,322,471	$3,131,302	$3,952,190	$ 6,346,906
Pounds of molybdenum	2,644,399	1,913,895	5,028,695	8,378,683	10,168,000
	In Percentage of Gross Income from Sales				
Gross income from sales	100.00	100.00	100.00	100.00	100.00
Gross cost of sales	68.15	65.63	55.23	30.26	36.12
Gross selling profit	31.85	34.37	44.77	69.74	63.88
Administrative expenses	5.16	5.34	4.74	4.28	3.07
Depreciation and depletion	10.44	12.20	4.67	4.37	4.17
Fixed charges	9.80	10.83	4.42	2.42	0.01
Net earnings available for dividends	7.47	6.77	28.70	49.85	50.85
Dividends paid	00.00	0.00	0.05	0.04	0.26
Earned per old share	$0.13	$0.11	$1.07	$2.13	$3.84
Earned per new share	0.043	0.037	0.36	0.71	1.28

* Source: Calculations based on Table 4.

pound for calcium molybdate. These prices remained at this level to the middle of 1936.

It is impossible to ascertain the exact cost per pound since the company includes the cost of selling in the cost of mining. Moreover, it does not include depreciation and depletion in the cost of mining and selling figures. Nevertheless, for what it is worth, adding the depreciation and depletion charges to the gross cost of sales figures and dividing the sum by the number of pounds of molybdenum produced gives some approximation of the com-

pany's cost per pound. Such a calculation gives 43.4, 53.7, 37.3, 19.9, and 25.1 cents for each year from 1931 to and including 1935, respectively. There is considerable variation in these figures, but it is reasonable to believe that the company in the last five years has reduced the cost per pound substantially as it increased its production. In the same period the company received a good price, which remained reasonably stable. The combination of these two factors led to larger profits.

The most significant changes in the company's financial position from December 31, 1931, to and including December 31, 1935, were the following: (1) the increase in the cash account from $437,015 to $1,709,304, (2) the substitution of an appraisal value of $74,131,250 for a nominal value of $5,166,162 for the ore reserves, (3) the elimination of the $2,386,620 of 6 per cent debenture income gold notes, (4) the increase in the earned surplus from $1,228,667 to $4,159,646, and (5) the increase in the capital surplus from $3,033,932 to $73,761,260. It is also worth noting that there was little change in the buildings, machinery, and equipment account in the face of an increase in production from 2,644,399 to 10,168,000 pounds of molybdenum per year.

The company has always had an ample amount of working capital; its ratio of current assets to current liabilities in the period under consideration was 24 to 1, 17 to 1, 6 to 1, 8 to 1, and 4.5 to 1, respectively. As of December 31, 1935, about 55 per cent of the working capital was represented by inventories, but in this connection it should be observed that the management aims to maintain approximately a year's supply of molybdenum to assure a reliable supply and uninterrupted service to the industry. Further, it should be noted that the inventories in every year except 1932 were priced at cost, while a tabulation previously presented leads to the presumption that the sales price had always been considerably in excess of cost.

That the company has had such a record as shown in Tables 4 and 6 can be attributed primarily to experienced and efficient management and a product for which there is economic need and a growing demand. Most of the officers and directors of the company have had wide experience in metals. Several of them

TABLE 6

COMPARATIVE STATEMENT OF ASSETS AND LIABILITIES, 1931–35

Accounts	1931	1932	1933	1934	1935
Assets:					
Current assets:					
Cash in banks and on hand	$ 427,015	$ 509,223	$ 943,433	$1,164,052	$ 1,079,304
U.S. treasury notes	.....	303,114	.....	.....	.....
Accounts and notes receivable	165,538	123,937	145,056	246,131	272,247
Sundries receivable	17,860	9,107	.....	.....	.....
Inventories	906,721	827,082	710,568	1,257,127	1,500,045
Total	$1,527,134	$1,772,463	$1,799,057	$2,667,310	$ 3,481,596
Fixed assets:					
Buildings, machinery equipment, etc.	$1,991,370	$1,996,088	$1,750,327	$1,953,659	$ 2,369,895
Less reserve for depreciation	820,414	968,190	385,788	532,066	641,274
	$1,170,956	$1,027,898	$1,364,539	$1,421,593	$ 1,728,621
Discovered increment	$5,166,162	$5,166,161	$5,166,161	$5,166,161	$74,131,250*
Less reserve for depletion	1,117,884	603,859	960,746	1,473,771	369,990
	$4,048,278	$4,562,302	$4,205,415	$3,692,390	$73,761,260
Total fixed assets	$5,219,234	$5,590,200	$5,569,954	$5,113,983	$75,489,881
Deferred debit items	5,110	7,175	12,260	19,221	105,511
	$6,751,479	$7,369,839	$7,381,271	$7,800,514	$79,076,988
Liabilities:					
Taxes payable	†	†	†	$ 250,672	$ 511,768
Accounts payable	$ 27,751	$ 37,131	$ 64,537	33,403	129,341
Expenses accrued	34,999	63,750	206,787	60,214	131,652
Total current liabilities	$ 62,750	$ 100,881	$ 271,324	$ 344,289	$ 772,761
6 percent debenture income gold notes	$2,386,820	$2,386,820	$1,800,000	$1,000,000	.....
Provisional reserve for employees' welfare fund	.....	.....	.....	35,000	50,000
Contingent liability under foreign contracts	.....	.....	.....	.....	287,357
Royalties	.....	.....	.....	.....	6,653
Total reserves	.....	.....	.....	$ 35,000	$ 344,010
Capital:					
Common stock—no par stated value	$ 39,311	$ 39,311	$ 39,311	$ 39,311	$ 39,311‡
Discovered increment surplus	3,033,932	3,547,956	3,191,069	2,678,044	73,761,260§
Earned surplus	1,228,667	1,294,871	2,079,567	3,703,870	4,150,646
	$4,301,910	$4,882,138	$5,309,947	$6,421,225	$77,960,217
	$6,751,479	$7,369,839	$7,381,271	$7,800,514	$79,076,988

* "Discovered increment" of the mine has been revalued in accordance with a survey made as of January 1, 1935. The valuation was determined by the application of the Hoskold formula. In fixing this revaluation the Board of Directors set forth that "the same is subject to revision when and as circumstances in the future may render advisable."

† Apparently included in accrued expenses.

‡ The authorized capital was increased from 1,000,000 shares to 3,000,000 shares of no par value and the 840,000 shares outstanding were split on a basis of three for one into 2,520,000 shares, in accordance with action taken by stockholders at a special meeting held on October 22, 1935.

§ There has been restored to "discovered increment surplus" the sum of $1,014,345.95 by a transfer from "earned surplus." This amount was originally transferred to "earned surplus" in accordance with action of stockholders at a special meeting held on October 20, 1926.

hold responsible positions in the American Metal Company, Limited, or its subsidiaries. Only when one pauses to realize that it was not until after the World War that any substantial use was made of molybdenum, not until after 1924 that the company could find a sufficient market to warrant reopening its mine, not until late in 1928 that molybdenum was first used commercially in cast iron, and not until very recently that molybdenum steels and irons were used by the railroads and construction industries, does one appreciate the future possibilities of the metal.

Because of molybdenum's ability to increase the torsional strength and the abrasional and heat resistance of steel and iron, it is finding increasing favor in the manufacture of automobiles, airplanes, and machinery. Moreover, it seems fairly evident that consumption will continue to increase as this new, more durable product is adopted by the railroad and construction fields—two industries in which the consumption is as yet very limited. Since the largest known supplies of the ore are located in this country, it is no idle dream to believe that the Climax Molybdenum Company may be another International Nickel Company in embryo.

The uses of molybdenum in this country show a definite tendency toward rapid expansion. That the management of the Climax Molybdenum Company is looking forward to this development is evidenced by the fact that according to statements made in the most recent annual report: "Plans are under way for increasing production facilities to keep pace with the increasing demand for the company's products."[10] The management has appropriated approximately $2,600,000 for plant expenditures in the year 1936. This is just another step toward the realization of the management's goal to step up production to 25,000,000 pounds of molybdenum per year. So far as the 1936 appropriations are concerned, it is contemplated that it will not be necessary for the company to borrow any money to meet the expenditures. The funds necessary will be supplied from earnings.

The Climax Molybdenum Company has made several important contributions to the use of molybdenum in the iron and steel industry. It has (1) assured the industry of a stable and adequate

[10] *Annual Report for 1935.*

supply of molybdenum for all its needs, (2) maintained a stable price, (3) developed and introduced calcium molybdate as a medium for adding molybdenum to steel at a price below ferro-molybdenum which was formerly used, (4) fostered the use of molybdenum in cast iron which today is being economically applied in a wide variety of castings, (5) distributed periodically technical publications on the use of molybdenum in iron and steel containing information derived from both its own and the investigations of others in the alloy steel and iron industry, and (6) eliminated troubles encountered in the fabrication and heat-treating of molybdenum high-speed steel. Climax's discovery that the addition of proper amounts of copper and boron makes it possible to handle molybdenum high-speed steel with just as much ease as tungsten high-speed steel promises to be a most important one throughout the world.

JAN - 1937
V. X

STOCKHOLDERS' PARTICIPATIONS IN ASSETS IN DISSOLUTION[1]

W. H. S. STEVENS[2]

IN GENERAL, the characteristics of stockholders' participations in assets closely resemble those of participations in profits. The most important difference perhaps lies in the fact that stocks preferred in the distribution of profits may or may not be preferred in the distribution of assets. As elsewhere discussed,[3] the true preferred stock is defined in these studies as an issue entitled to a preferential distribution of profits. This definition also conforms closely to the actual facts of terminology based on New York Stock Exchange listing applications,[4] practically all stocks designated as preferred in these listing applications being entitled to a share of the profits before anything is paid on any junior issue.[5] The writer has accordingly adopted this definition of a preferred stock and it is so used throughout his studies.

No such general rules of law or terminology as the foregoing, however, apply to preferred stock where participations in assets are involved. Stocks preferred as to distribution of profits are, as stated, not always preferred as to the distribution of assets in dissolution. Hence the numerous preferred issues not entitled to

[1] This is the fourth of a series of studies of capital stock being made by the writer under a grant from the Social Science Research Council. The first of these studies, "Rights of Non-cumulative Preferred Shareholders," appeared in the *Columbia Law Review*, XXXIV (December, 1934), 1439; the second, "Discretion of the Directors in the Distribution of Non-cumulative Preferred Dividends," in the *Georgetown Law Journal*, XXIV (January, 1936), 371; the third, "Stockholders' Participations in Profits," in the *Journal of Business*, IX (April and July, 1936), 114, 210.

[2] Graduate School in the Social Sciences, American University, Washington, D.C.

[3] Cf. Stevens, *Journal of Business*, IX (April, 1936), 115, esp. n. 4.

[4] Most of the references in this article are to such listing applications. In the footnotes these applications are referred to only by serial letter and number.

[5] This is subject to the qualification that to date information is not available on several issues recorded in the older listing applications other than the bare fact that the stock is termed "preferred" in these listing applications.

any preferential participation in assets have no counterpart in any of the types of profit participation, all stock classed as preferred in the discussion of the distribution of profits being entitled to preferential dividends under the definition employed by the writer.

FIXED PARTICIPATIONS IN ASSETS

Fixed participations in assets, like fixed participations in profits, may be defined as those in which the share to which the stockholder is entitled is definitely limited to a specified amount or sum of money. In the case of no-par and sometimes par shares it is specifically thus expressed as also in profits participations. In the case of par shares it is perhaps more frequently stated in terms which may be readily translated into such an amount as, for example, "par" or "par" plus a specified premium. Indeterminate participating issues, on the other hand, are those in which the right of participation is not limited to a specific sum but depends entirely upon the amount of the assets available.

Fixed initial distributions on preferred stock.—As is subsequently shown, the great majority of preferred stocks recorded in New York Stock Exchange listing applications are also preferred in the distribution of the assets of the corporation in dissolution. The amounts of these distributions or preferences are, of course, fixed by the statute, charter, by-laws, resolution of stockholders, or other instrument defining the shareholders' rights in the same way as are preferred dividend rates. Owing to the different characteristics of par and no-par and cumulative and non-cumulative preferred issues, as well as to voluntary and involuntary dissolution, the terms of these asset preferences show marked variations.

In the case of par-value shares the initial preference distribution from the assets may be (1) par,[6] (2) par plus a premium,[7]

[6] "In case of liquidation or dissolution or distribution of the assets of the corporation, the holders of the said preferred stock shall be paid the par amount of their preferred shares before any amount shall be payable to the holders of common stock" (American Ice Co. [1917], A-4760).

[7] "Upon any dissolution or liquidation of the corporation, or upon any distribution of capital, or in the event of the insolvency of the corporation, there shall be paid to the holders of the Preferred Stock fifty-six and one-quarter dollars ($56.25) [par $50] per share before any sum shall be paid to or any assets distributed among the holders of the Common Stock" (Elk Horn Coal Corp. [1915], A-4773).

(3) par and accrued or accumulated dividends,[8] or (4) par plus a premium and plus accrued or accumulated dividends.[9]

In the case of no-par preferred stock the initial preference to assets in dissolution, like initial preferred dividends, on such stock is a specified amount or sum of money. In this case there can be no premium since there is no par value. The initial preference of these issues to assets, therefore, is either (1) a specified amount or sum of money[10] or (2) a specified amount or sum of money plus accrued or accumulated dividends.[11]

Finally, both par and no-par issues frequently provide a higher initial distribution from assets when the dissolution is voluntary than when it is involuntary.[12]

Table 1 shows the fixed initial preferences to assets for those

[8] "In the event of liquidation or dissolution of the company . . . . the holders of the prior preference stock then outstanding shall be entitled to receive out of the assets of the Company, the par value of their respective shares and an amount equal to the dividends accrued and unpaid thereon . . . . before any distribution shall be made to the holders of the class A stock or of the common stock" (art. iv [*e*], "Agreement of Merger and Consolidation," United States Leather Co. [1927], A-7623, Exhibits).

[9] "In the event of any liquidation, dissolution or winding up of the affairs of the Corporation, ... the holders of the Preferred Stock shall be entitled to be paid in full the par value thereof, together with accrued dividends thereon, and an additional sum of $10.00 per share, before any distribution or payment shall be made to the holders of stock of any other class" (Certificate of incorporation, Abraham & Strauss, Inc. [1920], A-7029).

[10] "Holders of Class A Common Stock, after the above payments on account of the First Preferred Stock and Preference Stock, shall be entitled to $12.00 per share before any of the assets may be distributed to holders of Class B Stock" (Class A common [preferred] stock, Sterling Securities Corp., A-8766).

[11] "In the event of the dissolution or liquidation of the corporation, whether voluntary or involuntary, the holders of the Convertible Preference Stock then outstanding shall be entitled to receive out of the assets of the corporation available for distribution to stockholders, sixty-five dollars ($65) per share and in addition thereto an amount equal to accrued unpaid dividends before any payment shall be made to the holders of the Common Stock of the corporation" ("Convertible Preference Stock [no par]," Chicago Pneumatic Tool Corp.; Certificate of Incorporation as amended [1928], A-8376, Exhibit A par. [*e*]).

[12] The Goodyear Tire & Rubber Co., 7 per cent preferred (1921)—$110 and accrued dividends if voluntary, $100 and accrued dividends if involuntary (par $100) (A-7674).

Crown Zellerbach Corp. $6.00 convertible preferred (1924)—$120 if voluntary, $100 if involuntary, and accrued dividends in either case (no par stock) (A-9052).

preferred stocks, recorded in New York Stock Exchange listing applications, which are entitled to such initial preference distributions.

Ignoring for the moment the matter of accumulated dividends, only 149 or 16.5 per cent of the 900 preferred stocks also preferred

TABLE 1

INITIAL PREFERENCE TO ASSETS IN DISSOLUTION OF PAR AND NO-PAR PREFERRED STOCKS RECORDED IN NEW YORK STOCK EXCHANGE LISTING APPLICATIONS, 1885–1934

Type of Preference	Par Stocks	No-Par Stocks	Total
Par	101	.....	101
Fixed sum	2	18	20
Par and fixed premium	4	.....	4
Par and accrued or accumulated dividends	355	.....	355
Fixed sum and accrued or accumulated dividends	2	97	99
Par, fixed premium, and accrued or accumulated dividends	145	.....	145
Par in involuntary, par and fixed premium in voluntary dissolution	1	.....	1
Par and accrued or accumulated dividends in involuntary, par and fixed premium and accrued or accumulated dividends in voluntary dissolution	140	.....	140
Fixed sum in involuntary, higher fixed sum in voluntary dissolution	.....	.....	.....
Fixed sum and accrued or accumulated dividends in involuntary, higher fixed sum and accrued or accumulated dividends in voluntary dissolution	2	33	35
Total entitled to fixed initial preference	752	148	900*

* The remaining number of the 1,094 issues recorded in the New York Stock Exchange listing applications is 194. Of this number 49 belong in groups not preferred as to distribution of assets in dissolution (see Types 2, 5, and 7 in Table 3); 29 are issues known to be preferred as to assets but for which details of preference are not recorded; 3 are issues which specifically state that there is "no specific provision as to assets"; 5 have special forms of asset participation which do not lend themselves to classification; and 108 are issues where the listing application gave no information as to rights to assets (see Table 3).

as to assets in the New York Stock Exchange listing applications, have been entitled to par plus a fixed premium. In addition, 176, or nearly 20 per cent, have been entitled to higher fixed participations in voluntary than in involuntary dissolution. The remaining 575 or nearly two-thirds (64 per cent) are entitled only to par or a fixed sum.[13]

[13] A result influenced in part by the fact already stated that in the nature of the case there can be no premium on a no-par issue.

Prior to 1905 all the preferred issues entitled to an initial asset preference belonged to the last group. Two issues entitled to par and a fixed premium and one entitled to a higher initial participation in voluntary than in involuntary dissolution, appeared in the period 1905–9. Both types increased rapidly thereafter. Based on preliminary tabulations not yet finally checked, the par and fixed-premium issues showed a constant increase by five-year periods to a maximum of 66 issues in 1925–29, while issues entitled to a higher fixed participation in voluntary dissolution rose, though somewhat less consistently, to a total of 72 issues in the same five-year period.

It may be conjectured that the premium-over-par idea was originally intended as a special inducement to procure the preferred shareholder's vote or consent in the event of a voluntary dissolution. Obviously, however, no such premium was necessary when the dissolution was involuntary, and higher preferences in voluntary dissolution may be regarded as a more scientific method of effecting the same result.

The fixed premiums on par-value stocks recorded in New York Stock Exchange listing applications normally range from 5 to 25 per cent of par. The highest premium recorded is apparently $75 per share over par reported by both the American Radiator and Standard Sanitary[14] and the American Zinc, Lead and Smelting Companies.[15] Relative to the $100 par of the first and the $25 par of the second of these issues, the premium is much greater on the latter.

Inspection of the figures indicates that the amounts of the premiums have tended to decline substantially on par plus premium issues and also on those entitled to higher premiums or fixed sums in voluntary dissolution. In the first period, 1910–14, when the numbers of these two types of issues became substantial, around two-thirds of them carried premiums or fixed-sum differences of 20–25 per cent and practically none were as low as 5 per cent. By 1925-29 the issues with a 5 per cent or less difference have become important both absolutely and relatively. Ten and

[14] A-8562 (1929). [15] A-4595 (1916).

15 per cent premiums predominate in the issues, while those with 20 to 25 per cent have all but disappeared.

It will also be noted from Table 1 that 773 of the 900 preferred issues entitled to preferential initial participations, or 86 per cent of the total, are also entitled to accrued or accumulated dividends. This, it may be suggested, is due primarily to the relatively high proportions of cumulative as compared with non-cumulative pre-preferred stocks recorded in the New York Stock Exchange listing applications.

If a preferred stock is cumulative, there is a sound theoretical reason for this provision with regard to accrued or accumulated dividends. Otherwise it would be possible for the common stockholders to profit from a dissolution. Thus, in the event of large profits over a series of years, the corporation by failing to pay the preferred dividends might, by dissolving, repay to the preferred shareholder only his original investment, all the profits being returned to the common shareholder along with his initial investment. Or again, in the event of abnormally large profits over a series of years after a similar series of unprofitable years which had piled up large accumulations of dividends on the preferred, it might be more profitable to the common shareholders to dissolve the corporation rather than to pay off the accumulations, if the preferred is not entitled to accumulated dividends. Where dividends are cumulative, therefore, the provision for the payment of accrued dividends in the event of dissolution is necessary to a thoroughgoing protection of the claims of the preferred shareholders to dividends in each year whether earned or not.

These conditions obviously do not apply in the case of the usual type of discretionary payment non-cumulative where the distribution of profits is expressly or impliedly left to the discretion of the directors regardless of whether the dividends are earned or not.[16] Here there cannot be, in the nature of the case, any such thing as accrued or accumulated dividends.

Table 2 develops rather clearly the fact that provisions for

[16] This group accounts for most of the non-cumulatives recorded in New York Stock Exchange listing applications; for discussion of the discretion of the directors in this matter, see Stevens, *Georgetown Law Journal*, XXIV, 371 ff.

the payment of accrued or accumulated dividends attach as a rule to cumulative and seldom to non-cumulative issues. Of the 91 non-cumulatives only 6 are entitled to accrued or accumulated dividends whereas all but 40 of the 808 cumulatives provide that on a distribution of assets the preferred shareholder shall receive such dividends.

TABLE 2

INITIAL PREFERENCE IN ASSETS IN DISSOLUTION OF CUMULATIVE AND NON-CUMULATIVE PREFERRED STOCKS RECORDED IN NEW YORK STOCK EXCHANGE LISTING APPLICATIONS, 1885–1934

Type of Participation in Assets	Cumulative	Non-cumulative	Total
Par or fixed sum	39	81	120*
Par and fixed premium	1	3	4
Par or fixed sum in involuntary and par and premium or higher fixed sum in involuntary dissolution	.....	1	1
Par and fixed premium and accrued or accumulated dividends	144	1	145
Par or fixed sum and accrued or accumulated dividends	449	5	454
Par or fixed sum and accrued dividends in involuntary and par and premium or higher fixed sum and accumulated dividends in voluntary dissolution	175	.....	175
Total	808	91	899*

* Information lacking as to whether cumulative or non-cumulative for one additional issue.

Where a non-cumulative issue belongs to the mandatory payment, trust fund, earned cumulative, or contingent cumulative types,[17] however, stockholders possess either rights or interests in dividends earned and not paid. In such issues, therefore, there may be dividends which are, in effect, accrued or accumulated and unpaid. Protection of the shareholders with reference to these earned dividends in the event of dissolution is, therefore, equally or more logically justifiable than is the protection of cumulative preferred shareholders in dividends unearned as well as earned. Particularly, perhaps, is this true when the non-cumu-

[17] For detailed explanations of these types see Stevens, *Columbia Law Review*, XXXIV, 1439, and *Georgetown Law Journal*, XXIV, 371.

lative preferred is not entitled to any initial preference to assets in dissolution.[18]

In mandatory payment issues[19] where the shareholders are entitled by the terms of the contract to the dividends earned in each year, it is possible that the preferred shareholders on a dissolution could collect the full amounts of their earned and unpaid dividends, since presumably they could have enforced such payments at any time in the event of the neglect of the directors to declare them.[20]

There is only one of the trust fund type of non-cumulatives[21] so far examined by the writer which contains the requirement that on a dissolution the preferred shareholders are entitled to be paid the amounts of dividends earned and not paid.[22] This is the Western Pacific preferred of 1916.[23] All these trust fund issues, however, definitely contemplate the segregation of each year's profits between the preferred and the common shareholders according to the earnings on each.[23a] Despite this fact the holders of

[18] Cf., e.g., Erie Railroad Co. first and second preferreds and Reading first and second preferreds.

[19] "The net earnings of the consolidated company in each and every year shall be divided as follows: First, not exceeding 5 per cent in quarterly installments to the holders of the preferred stocks, and the residue, as may be ordered from time to time by the Board of Directors, among the holders of the common stock" (C.C.C. & St. Louis Railway [1888]).

[20] *Wood* v. *Lary*, 47 Hun. 550 (N.Y. Sup. Ct. 1888). Cf. *Burk* v. *Ottawa Gas & Electric Co.*, 87 Kan. 6, 123 Pac. 857 (1912); *B. & M.H.L.R.R.* v. *Belfast*, 77 Me. 445, 1 Atl. 362 (1865); *Hazeltine* v. *B. & M.H.L.R.R.*, 79 Me. 411, 10 Atl. 328 (1887).

[21] "But no dividends shall in any year be paid upon any such other stock out of the net profits of any previous fiscal year in which the full dividends shall not have been paid on the Frst and Second Preferred Stocks" (Charter, Erie Railroad Co. [1895]).

[22] Most of these are not, however, entitled to any preferential distribution of assets.

[23] In the event of dissolution, etc., "the holders of the preferred stock shall be entitled to receive, out of the assets of the Corporation, the par value of their preferred stock and in addition the amount of the dividends thereon . . . . which under, the terms of the certificate of incorporation might have been but in fact shall not have been declared and paid for any fiscal year or years . . . . in which surplus profits applicable to the payment thereof were realized, before anything shall be paid to holders of common stock" (Charter, quoted in A-4746).

[23a] *Continental Ins. Co. et al.* v. *U.S. Reading Co. et al.*, 259 U.S. 179 (1922).

such non-cumulatives with the exception noted are in no better position in dissolution than the holders of discretionary payment non-cumulatives although there may be accrued or accumulated dividends in the one case and not in the other.

Apparently all the earned[24] and contingent[25] cumulative non-cumulatives recorded in New York Stock Exchange listing applications are entitled, as they probably should be, to accrued or accumulated dividends.

Non-preferential fixed initial distributions.—In a limited number of cases both common and preferred stocks participate with each other up to a certain amount, to establish fixed initial participations without preference on either issue as in the following example:

"After payment in full of said sums to the holders of the first preferred stock the holders of the cumulative preference stock and of the common stock shall be entitled to share ratably in the remainder of the assets of the corporation available for distribution . . . . in the ratio of 90% to the holders of the cumulative preference stock and 10% to the holders of the common; provided, however, that when, pursuant to such distribution, the holders of the cumulative preference stock shall have received fifty dollars ($50) per share in respect to their respective shares . . . . if such dissolution be involuntary or fifty-five dollars ($55) . . . . if such liquidation . . . . be voluntary" [any remaining assets will be distributed to the common].

[24] "The holders of Class A stock shall be entitled to receive out of the 'available net profits' (as herein defined) of the corporation, dividends at the rate of $4.20 per share per annum and no more, payable quarterly and cumulative to the extent but only to the extent earned in any fiscal year" (United Stores Corp., Class A, Exhibits, A-9005).

[25] ". . . . dividends upon the Class A stock when and as declared by the Board of Directors, shall be payable in cash at the rate of $4 per share per annum and no more. . . . . Such dividends upon the Class A Stock, whether or not earned in or for any year shall, however, not be cumulative, except and to the extent only as follows: If in or for any calendar year in which the net earnings available for dividends on the Class A Stock . . . . shall be at least equal to the sum which divided by the number of shares of Class A Stock issued and outstanding at the end of the calendar year would result in the sum of $8 . . . . there shall not have been declared, and paid or set apart for payment, upon the Class A Stock, dividends at the rate of $4 per share per annum . . . . then the deficiency for such calendar year shall accumulate and shall be declared, and paid or set apart for payment, upon the Class A Stock at the time outstanding before any dividend shall be declared or paid or set apart for payment in any subsequent calendar year upon the Common Stock" (par. 3, art. iv, of the certificate of incorporation of the General Cable Corp. [A-7727]).

Fixed initial distribution on common stock.—Aside from the cases just mentioned, common stocks rarely carry fixed initial distributions when preceded by preferred stocks entitled only to a fixed initial distribution from assets. In this respect they parallel again the situation with reference to the distribution of profits. Where the preferred shareholders are entitled to some distribution in excess of their fixed initial assets participation, however, the common stock is sometimes entitled also to an initial fixed distribution after that on the preferred stock is paid. Thus the certificate of incorporation of the Great Western Sugar Company (1905, par. 4) provided for the payment of par to the common stockholder after par on the preferred.[26] Also the old American Brake Shoe and Foundry common was entitled to an initial fixed participation of par and no more, after par on the preferred, the latter issue being the sole claimant to any remaining assets.[27]

Non-initial fixed distributions from assets.—In the case of profits the preferred is sometimes entitled to certain fixed participations in addition to its fixed initial dividends either (1) after fixed initial preferred dividends, (2) in participation with the common, or, more frequently, (3) after the payment of fixed initial dividends on both the preferred and the common. Similarly, common stocks are or may be entitled to corresponding non-initial fixed participations in profits after the fixed initial preferred dividends.

In the case of distribution of assets in dissolution, on the contrary, there are practically never any such additional participations on either the preferred or the common stock, at least in so far as issues listed on the New York Stock Exchange are concerned.[28] The sole exception to this rule apparently is the Hershey Chocolate Company convertible $4.00 no-par preferred of

[26] For exact terms see *infra* under subsection 3*b* of "Indeterminate Participation in Assets."

[27] A-3835.

[28] Since certain issues are entitled to par and certain others to par plus a premium, par might be regarded from one point of view as the fixed initial distribution and the premium, therefore, where given as a fixed additional distribution. This basis would make the classification of participations in assets for this group of preferreds conform somewhat more closely to the classification of participations in profits analyzed in Table I in the last preceding study, *Journal of Business*, IX, 131.

1927. This issue was entitled to an initial assets preference of $50 and accumulated dividends, after which it was to participate equally with the common until an additional sum of $50 was paid.[29] Here the preferred was entitled to a fixed initial distribution of $50 and an additional participating distribution of $50 with the common, the latter thus becoming entitled to a non-initial participating distribution of $50.

INDETERMINATE PARTICIPATION IN ASSETS

Indeterminate participations of shareholders in assets in dissolution exhibit the same three major groupings as indeterminate participations in profits: (1) exclusive, (2) residual, and (3) partial residual.

1. In the case of common stocks where there is no senior issue the shareholders are entitled to all the assets remaining after the payment of the obligations of the corporation. There is also one case recorded in New York Stock Exchange listing applications of where the common, though preceded by a preferred issue, is entitled to exclusive participation. Thus the terms of the Midland Steel Products provide that there shall be "no distribution out of assets" to the holders of preferred stock.[30]

2. Where both preferred and common stocks are outstanding and either or both are entitled to certain fixed participations in the assets after which one or the other obtains the balance of the assets, these latter distributions may be termed "residual participations." Up to this point, therefore, indeterminate participations in assets are substantially identical with those in profits.

3. In the case of partial residual participations, however, we encounter an important differentiation between assets and profits participations. This arises from the fact that, as preference to assets in dissolution is not common to all issues of preferred stock, there are several of such issues which carry neither assets preference nor fixed initial assets distributions but divide all the assets with common or other junior issues without distinction. There are thus two types of partial residual participation in assets: (*a*) those in which the preferred and the common divide the total

[29] A-7747. [30] A-9200 (1930).

assets, neither being entitled to any fixed participation, and (*b*) those in which the common and the preferred divide the remaining assets after certain prior initial or other distributions.

a) In some cases the terms of the charter specifically provide that the preferred and the common shall participate equally or ratably in any distribution of assets. Thus the Reading Company in the 1896 reorganization provided according to the listing application that "the Preferred and Common . . . . in the liquidation or dissolution of the corporation will share equally in pro rata distribution of assets."[31]

In other cases there is no specific statement in the charter or other instrument regarding the rights of shareholders to assets in dissolution, with the result that the participation rights must be inferred. Here we revert to the general legal principle that all stockholders stand upon the same footing with one another except so far as their rights may be modified by the terms of the contract. Stockholders are, as stockholders, entitled to all the assets in dissolution after the payment of debts and other prior claims. Hence the creation of an issue entitled merely to a preference in the distribution of profits does not alter in any way the status of this group of shareholders with reference to the distribution of assets, and they participate without preference in any such distribution share for share with every other shareholder.[32]

This type of non-preferential participation of preferred stock in distribution of assets seems to be particularly characteristic of the railroad preferreds prior to 1900.[33] Here the charters either

[31] A-2986.

[32] In the case of a distribution of the corporate assets among the stockholders (after payment of corporate indebtedness) all shareholders and classes of shareholders stand on the same footing in the absence of any statutory or contractual provisions to the contrary. The holders of preferred stock have no priority over common stockholders and hence only the same and no greater rights to share in the assets. Their shares are preferred with respect to dividends and not to capital stock and the assets are to be distributed as though the preferred stock were common stock (Cook, *Law of Corporations*, I [1923], 928; Fletcher, *Cyclopedia of the Law of Private Corporations*, VI [1919], 6039).

[33] Erie 1st and 2d (1895); Beaver Meadow Railroad & Coal Co. (afterward Lehigh Valley) (1850); Minneapolis, St. Paul & Sault Ste Marie Railway (1888); Reading Company 1st and 2d (1896); Rutland Railroad (1867); Atchison, Topeka & Santa

contained no provision with reference to asset participation or specifically provided that the shareholders should participate equally share for share.

b) Besides this group of issues in which neither the preferred nor the common is entitled to any fixed preferences in the distribution of assets in dissolution but each to a portion of the residue remaining after the payment of indebtedness and other prior claims, there is also the group previously referred to where the common and the preferred shareholders divide the remaining assets after the payment of certain fixed distributions to the preferred or common shareholders or both.

In the case of Burns Brothers the Class A common (preferred) is entitled to participate with the Class B common in the residue of assets remaining after the payment of an initial preference distribution of $60 from the assets on Class A.[34]

In other cases the partial residual participation is after a fixed initial distribution of assets to both the preferred and the common shareholders:

> . . . . But in case of liquidation or distribution of assets of the corporation, the holders of preferred stock shall be paid the par amount of their preferred shares before any amount shall be payable to the holders of the common stock; and after the payment of the par amount of the common stock to the holders thereof, the remainder of the assets and funds shall be distributed ratably among all the shareholders without preference.[35]

As in the case of profits, partial residual participation in assets in dissolution may be on a share-for-share basis, as in the preceding illustrations, or on a class basis. For example, in 1927 the Great Western Sugar Company just referred to amended the

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Fe (1896); Union Pacific (1897); Buffalo, Rochester & Pittsburgh Rwy. Co. (1886); Chicago, St. Paul, Minneapolis & Omaha (1880); Chicago & Northwestern (1864); Cleveland, Cincinnati, Chicago & St. Louis (1889); Colorado & Southern (1898).

[34] "Upon any dissolution, liquidation or distribution of capital . . . . the holders of Class A common stock shall be entitled to receive sixty dollars ($60) per share, and the then remaining balance, if any, of the assets shall be distributed ratably among the holders of Class A common stock and Class B common stock, irrespective of class, share and share alike" (Certificate of Incorporation art. iii, Fifth [1922]).

[35] Great Western Sugar Co., Certificate of Incorporation, Fourth (1905).

terms of its preferred issue of 1905 to provide that, after the payment of par on the cumulative preferred and an equal amount pro rata to the common, the preferred and the common were each to receive one-half of the remaining assets.[36]

The advantages of class as compared with per-share participation in preventing dilution of the preferred stockholders' equity in residual profits through stock dividends and capital stock split-ups have been elsewhere discussed.[37] It is sufficient, therefore, in this connection to point out that the advantages and disadvantages of class and per-share partial residual participations in profits are equally applicable to partial residual participations in assets. Such participations in assets, moreover, like those in profits, may of course be equal as between the preferred and the common either on a class or per-share basis, or they may be higher on the preferred and lower on the common, or vice versa.

In 1917 the American Ice Company authorized a 6 per cent non-cumulative preferred entitled, after fixed initial distributions on both preferred and common, to divide the residual assets in the ratio per share of four on the preferred to one on the common.[38]

On the other hand, Porto Rican American Tobacco Company Class A common (preferred) of 1930 was entitled, after a fixed initial preference of $50 and accumulated dividends, to divide the residue of profits with Class B common in the ratio of $1.00 on Class A to $2.00 on Class B shares.[39]

On a class basis United States Leather Class A participating and convertible common (preferred) (1927) was entitled to two-thirds and the common to one-third of the assets after fixed participations on the prior preferred.[40] Reversing this arrangement, Pierce Arrow Class A (preferred) divided the remaining assets with the Class B common, after $105 and accumulated dividends on the preferred stock, in the ratio of one-half as much to Class A as to Class B.[41]

[36] A-7596. [37] Stevens, *Journal of Business*, IX, 123.

[38] A-4760. [39] A-9430.

[40] A-7623. The Class A common (preferred) was not, however, entitled to any initial or other fixed preference from assets before this division.

[41] A-8134.

CLASSIFICATION OF STOCKS ACCORDING TO PARTICIPATION IN ASSETS

Table 3 shows the distribution of 1,094 preferred stocks recorded in New York Stock Exchange listing applications through 1934 according to their participation in assets.

Of these 1,094 preferred stocks recorded in New York Stock Exchange listing applications up to 1934, only 793 can be exactly classified from the listing application by type of assets participation. However, it is possible to infer the type of participation of most of the remaining issues from general legal principles with regard to stockholders' rights. In the case of participations in profits the generally accepted legal rule outside of Pennsylvania is that the existence of the fixed participation in profits, representing the preferred stock preference, deprives the preferred shareholder of any further participations unless they are affirmatively set forth in the contract.[42] By analogy from this legal principle with reference to participations in profits it seems reasonably certain that the 185 issues in the unclassified group "known to have asset preferences but with no statement regarding further participation" would belong to Type 1-A, raising the total of this group to 885 or over 80 per cent of the 1,094 issues. Similarly, the three unclassified issues stated to have "no specific provision as to assets" and the 108 with no listing statement regarding assets may be classified as Type 7-A, following the legal rule previously referred to—that in a distribution of corporate assets all classes of shareholders stand on the same footing in the absence of any statutory or contractual provisions to the contrary.[43] This would increase the total issues of this type to 154 or nearly 15 per cent of the total issues recorded.

Type 1.—A total of 700 issues, or nearly 90 per cent of the 793 issues where the type of asset participation has been definitely classified, belong to the group of preferred stocks entitled only to initial preference distributions from assets. This is somewhat higher, it may be noted, than the proportion of such issues en-

[42] For detailed discussion and criticism of this doctrine see Stevens, *Journal of Business*, IX, 212–16.

[43] *Supra*, n. 32.

TABLE 3

PARTICIPATION IN ASSETS OF PREFERRED AND COMMON STOCKS OF COMPANIES ISSUING PREFERRED STOCK, AS RECORDED IN NEW YORK EXCHANGE LISTING APPLICATIONS, 1885–1934

Type	Kind of Stock	Type of Participation	Division of Assets to Which Entitled	Number of Preferred Issues
1-A....	Preferred	Fixed	Initial preferred distribution	700*
1-B....	Common	Residual	All assets after initial preferred distribution	.....
2-A....	Preferred	Fixed	Initial non-preferential distribution in participation with common	5
2-B....	Common	Fixed and residual	All assets after non-preferential initial distribution in participation with the preferred	.....
3-A....	Preferred	Fixed	Initial preferred distribution and fixed participating distribution with common	1
3-B....	Common	Fixed and residual	All assets after initial preferred distribution and fixed participating distribution with preferred	.....
4-A....	Preferred	Fixed and residual	All assets after initial fixed distributions on preferred and common	1
4-B....	Common	Fixed	Fixed initial distribution after initial preferred distribution	.....
5-A....	Preferred	Non-participating	No participation in assets in dissolution	1
5-B....	Common	Exclusive	All assets in dissolution	.....
6-B....	Common	Exclusive	All assets in companies with no preference stock outstanding	.....
7-A....	Preferred	Partial residual	No preference as to assets	43†
7-B....	Common	Partial residual	No preference as to assets	.....
8-A....	Preferred	Fixed and partial residual	A part of the remaining assets after fixed initial distribution on preferred	10
8-B....	Common	Partial residual	A part of the remaining assets after fixed initial distribution on preferred	.....
9-A....	Preferred	Fixed and partial residual	A part of the remaining assets after fixed initial distributions on both preferred and common	31
9-B....	Common	Fixed and partial residual	A part of the remaining assets after fixed initial distributions on both preferred and common	.....
10-A....	Preferred	Fixed and partial residual	A part of the remaining assets after fixed initial distributions on both preferred and common and fixed additional distribution on common	1

* Including the 185 issues in the unclassified group known to have asset preference this total would be 885 (see text).

† Including the 3 "no specific provision as to assets" and the 108 "no statement regarding assets" issues in the unclassified group, this total would be 154 (see text).

TABLE 3—*Continued*

Type	Kind of Stock	Type of Participation	Division of Assets to Which Entitled	Number of Preferred Issues
10-B....	Common	Fixed and partial residual	A part of the remaining assets after fixed initial distributions on both preferred and common and fixed additional distribution on common	.....
Total classified by type				793
Issues known to have asset preference but with no statement regarding further participation				185
Issues stated "no specific provision as to assets" in dissolution				3
Issues with no statement regarding assets in dissolution				108
Special asset participations not definitely classified				5
Total not classified by type				301
Total grand issues				1,094

titled only to fixed initial dividends representing the preferred stock preference (between 86 and 87 per cent) as shown in a previous study.[44]

The predominance of industrial issues in the total (646 out of 793) combined with the extremely high proportion of such issues which are entitled only to an initial preferred distribution is primarily responsible for the high percentage of these issues in the total figure. Of the 646 industrial issues, 588, or slightly over 90 per cent, are entitled to initial preferred distributions, as appears from Table 4. For the utilities the percentage (83.5) is somewhat lower, and for the railroads substantially lower (64.2).

The use of fixed participations of preferred stock in assets derives something, no doubt, from the theory of the return of principal involved in the loan of funds. In some instances securities of this type have resulted from reorganization plans in which certain creditors were to receive preferred stock in satisfaction of either all or part of their claims. In such cases it would not, there-

[44] Stevens, *Journal of Business*, IX, Table I, 131.

fore, be surprising if such creditors were disposed to insist upon a first claim on the assets up to the par of their shares, in the event of dissolution. The same would presumably be true in certain cases of consolidation, as, for example, where preferred stock was to be issued by the new company up to the value of the property

TABLE 4

DISTRIBUTION OF PREFERRED STOCKS RECORDED IN NEW YORK STOCK EXCHANGE LISTING APPLICATIONS BY TYPE OF ASSET PARTICIPATION AND KIND OF BUSINESS, 1885–1934

TYPE	NUMBER OF ISSUES			
	Railroads	Utilities	Industrials	Total
1-A	36	76	588	700
2-A	1	.....	4	5
3-A	.....	.....	1	1
4-A	.....	.....	1	1
5-A	.....	.....	1	1
7-A	16	3	24	43
8-A	1	.....	9	10
9-A	2	11	18	31
10-A	.....	1	.....	1
Total classified by type	56	91	646	793
Issues known to have preference but with no statement regarding further participation	14	26	145	185
Issues stating "no specific provision as to assets"	3	.....	.....	3
Issues with no statement regarding assets in dissolution	74	6	28	108
Special asset participations not definitely classified	.....	.....	5	5
Total not classified by type	91	32	178	301
Grand total issues	147	123	824	1,094

to be acquired. Although either or both of these conditions may have influenced the development of asset preferences for preferred stockholders, it seems probable that their extensive development is due largely to an attempt to protect the preferred shareholder from exploitation by and in favor of the common shareholder.

If the preferred stock is not specifically limited or entitled to a preference, it presumably participates share for share with

every other share in any distribution of assets. So long as the contribution of the common and the preferred shareholders represented by each share of the capital stock is the same, there seems at first thought no particular objection to this method of distribution. If, on the other hand, the contribution of a share of preferred stock is $100 and that of the common only $25, the common would obviously profit at the expense of the preferred on a share-for-share distribution of assets if a dissolution took place before the company began business. A similar situation will occur on a later dissolution where the number of common shares has been increased by additional issues disposed of for cash or property if the per-share contribution of these common shares to the capital stock is less per share than that of the preferred. On the other hand, if the contributions to capital stock are identical for both classes, dissolution with a large surplus on the books may return to the preferred stockholder far more than his original contribution if he possesses no preference but participates share for share. And this, no doubt, is one of the reasons why class participation in assets is not more frequently employed as a protection against dilution.

In such a case as last mentioned it is to be expected, in the absence of any restriction, that the number of shares of common will be increased either through split-ups of common stock or through stock dividends to such a point that the preferred stockholder would, on a share-for-share basis, obtain no more than his original contribution in case of dissolution. Moreover, there may be nothing to preclude the multiplication of these common shares to a point where dissolution would leave the preferred stockholder with only an insignificant portion of his original contribution. And this might still be true even though the company had been exceedingly prosperous.

In the event of the possession by preferred shareholders of special voting controls over issues of new common or common stock split-ups, common stock dividends, and corporation dissolution, the preferred is, of course, in a position to defeat any of the foregoing dilutions of its interest in the assets. However, these special voting controls may not always be present, and full

voting rights on the part of the preferred frequently constitute no protection because of the great excess of common over preferred shares. Finally, the development of strictly non-voting preferred has tended to eliminate voting protection against dilution.

The foregoing considerations are of some assistance in understanding the importance of the asset preference provision of preferred stock issues even though they do not fully explain the predominance of issues entitled only to this preference in the total number of issues recorded. Some further discussion of this matter will be found under Type 7 below.

The fixed initial preference has, however, a special applicability in the case of non-cumulative preferred stock. In the average type of discretionary payment non-cumulative, the investor, as previously explained,[45] has no protection against the non-payment of dividends earned on the preferred and their use for building up the property and earning power of the company. Presumably this will occur most frequently when the earnings are less or not much more than sufficient to cover the preferred dividend requirements. At such times the directors obviously possess the best justification for their refusal to make preferred dividend disbursements. When the non-cumulative shareholder is not entitled to an initial preference distribution from the assets, he will presumably participate share for share in the assets in dissolution. If, therefore, the property has been built up largely at his expense, it is apparent that on a pro rata distribution the common stock will share in any such increased value realized on the distribution.[46] The initial fixed preference to assets will not, it is true, necessarily prevent this from occurring because the source of part of any such increased values is the earned and unpaid dividends on the preferred. It will, however, assure that any increases in values from this source will contribute to as full an extent as necessary to the payment of the preferred stock asset

[45] Stevens, *Georgetown Law Journal*, XXIV, 374.

[46] If the number of common shares is very large in relation to the number of preferred shares, the lion's share will, moreover, go to the common shareholders as a group.

preference before the common shareholders can obtain any part of it. The proper way, no doubt, to correct this absorption of earned and unpaid preferred dividends has already been suggested above—namely, that non-cumulative preferred stocks should carry a clause providing that such stocks should, in the event of dissolution, be entitled to all such earned and unpaid dividends.

Type 2.—So far as New York Stock Exchange listing applications are concerned, the establishment of fixed non-preferential distributions of assets to the preferred in participation with the common is a comparatively new idea.[47] The arrangement for initial participation, however, closely resembles that of the so-called, preferred, of American International with regard to profits, this stock being entitled to dividends at the same rate as paid on common up to 7 per cent. From the point of view of the preferred shareholder this asset participation has little and from that of the common stockholder much to commend it. Where the preferred is entitled to a preference distribution from the assets, the common stockholder gets only what is left, if anything (Type 1). And, on the other hand, where the preferred shareholder has no preference both the common and the preferred are on a like footing with regard to all the assets (Type 7). In this third form the preferred issues lose the advantages of both initial preference and unlimited participation and must divide assets with the common to obtain any initial participation. The possible advantages of any such arrangement to the common shareholders in the case of the dissolution are too obvious to require further discussion.

Type 3.—The convertible preferred of the Hershey Chocolate Corporation (of Del.)[48] is the sole representative in stock exchange listing applications of a preferred stock which participates with

[47] The earliest of these issues is apparently that of the General Electric Co. (special stock), which dates from 1922. "Such stock shall not receive in any distribution of assets an amount per share in excess of $10 and accrued dividends" (resolution of stockholders and board of directors, A-5798). Some may not agree with the writer's classification of this issue, but as the stock is specifically not entitled to any preference other than dividends, it apparently is entitled under the general legal rule to participate with the common up to this $10 limit.

[48] A-7747 (1927).

the common in the distribution of assets up to a fixed amount to establish an additional fixed participation over and above its initial preferred distribution. With regard to profits the Hershey issue is entitled to an additional fixed participation after its initial preferred dividend before any distribution to junior issues. The method of distributing assets for this company differs, therefore, from that used for profits and follows that employed by various other issues in distributing profits.[49]

Much which has been said elsewhere[50] with reference to this type of distribution of profits applies also to asset distributions. So long as the total assets involved are sufficient to permit the payment of this additional fixed distribution on the preferred in participation with the common, it is of no particular importance whether it is paid in participation with the common or is included in the initial fixed distribution. If, however, the assets are not sufficient to pay the additional fixed preferred distribution in participation with the common, the preferred shareholder would obviously be better off if he were entitled to a higher fixed initial distribution instead.

Type 4.—The peculiar asset distribution provisions of the American Brake Shoe and Foundry preferred issue[51] are obviously copied from provisions of the same issue with reference to distribution of profits. This issue is the sole example recorded in New York Stock Exchange listing applications of a preferred stock entitled either to all residual profits and/or to all residual assets after prior fixed participations.

The characteristics of this type of issue from the standpoint of assets distribution are obviously much the same as from that of distributions of profits. In both cases the terms of the issue place the common in a most unfavorable position as compared with the preferred. The former is entitled neither to be paid first nor to any share of the residual assets or profits which go instead to the preferred shareholders.[52]

[49] Botony Consolidated Mills and Curtiss Aeroplane and Motor; see Stevens, *Journal of Business*, IX, 118–19.

[50] *Ibid.*, 219 ff. [51] A-3835.

[52] Cf. the writer's suggestion that the common stock of this company is actually a true deferred stock and not common at all (Stevens, *Journal of Business*, IX, 218).

Type 5.—The New York Stock Exchange listing applications also yield only one illustration of a preferred stock entitled to no participation in assets, and that is the $2.00 preferred of the Midland Steel Products Company already referred to. Under ordinary conditions this would create an exclusive participating common, but it so happens in this case that the $2.00 preferred is preceded by a fixed participating issue. So far as the prior preferred is concerned, therefore, this common stock is a residual participating issue. From the standpoint of the $2.00 preferred, however, this common is entitled to all the assets and hence is entitled to exclusive instead of to the customary residual or partial residual participation. While the equal participation of common and preferred shareholders in assets in dissolution has much to recommend it, if proper safeguards can be found to prevent manipulation in favor of the common shareholders,[53] there is little to be said in favor of the complete elimination of the preferred shareholders in distribution of assets. With this elimination of one of the fundamental rights of shareholders, the stock takes on the aspect of a mere certificate of participation in profits. If, as happens to be true in the case under discussion, the issue also eliminates all voting control by shareholders, there is really a question of whether it can properly be regarded as stock at all. In the absence, moreover, of special preferred stock voting control on voluntary dissolution, the elimination of the asset participation opens wide the door to dissolutions extraordinarily favorable to the common shareholders, particularly where the stock is non-cumulative.

Type 6.—This type consists of common stocks in companies having no preferred issues outstanding. No count has been made of these issues, which are obviously entitled to exclusive participation and require no discussion.

Type 7.—This group comprises 43 issues which are specifically stated to have no preference as to assets. In addition, there are 108 issues where the listing application contains no information on assets participation and 3 stating "no specific provision as to assets."

[53] See Type 7 below.

As pointed out in the foregoing discussion, it seems fairly safe to assume that the three latter issues are not entitled to any asset preference but participate share for share, along with the common stock, in accordance with the general legal rule that, in the absence of some specific preference qualification or limitation, all stocks stand on the same footing with regard to asset distributions.[54]

Had there been any distinction between the preferred and the common stock issues of companies in the group of 108 for which the listing applications contain no information on assets distribution, it seems probable, if not certain, that these applications would have referred to it. For these reasons it is reasonable to assume that these 108 as well as the 3 "no specific provision" issues belong in Type 7. On this basis the total number of issues belonging to this group becomes 154 preferreds, making it numerically the most important type with reference to assets participations excepting only Type 1. Type 7, moreover, is of particular interest in that it has, strictly speaking, no counterpart among the various types of profit participation which have been described in a previous study.[55]

As has previously been suggested, preferred stock is essentially stock as much as is common stock. Hence, in the judgment of the writer, the existence of the preference in the distribution of profits constitutes no argument for a similar asset preference as such. To the contrary it may be urged that the existence of the preference as to profits constitutes an excellent reason why this type of issue should have no different treatment with regard to assets in dissolution than the common share. The major objections to share-for-share participations in assets have already been considered in the discussion of Type 1 above, including the possibilities both of dilution of the interest in assets represented by the preferred stock contribution and of asset participation by preferred shareholders in excess of their contributions. It will no

[54] *Supra*, discussion of Table 3 and nn.

[55] Stevens, *Journal of Business*, Vol. IX. It will be recalled that the term "preferred stock" was there specifically defined as an issue entitled to a participation in profits before dividends are paid on junior issues. An issue, therefore, without this preference would not be preferred under the writer's classification.

doubt occur to many that neither preferreds limited to fixed initial distributions of assets nor carrying prior fixed participations ahead of junior issues are necessary to protection against either of these contingencies. From one point of view, heretofore expressed, stock by whatever name it may be called is nevertheless stock. From this angle of approach one of the principal objections to initial asset preferences for preferred stockholders is that prevention of dilution by this method compels the common to shoulder the major share and frequently all of any business losses in the event of dissolution. This, however, can easily be avoided by a class participation arrangement providing that both the preferred and the common shall participate in the assets each as a class in proportion to their respective contributions to capital stock represented by the issue of capital stock for cash or other assets without preference and up to the total amounts contributed by the preferred stockholders. This is all that is necessary to prevent not only dilution of the preferred stockholders' contribution through split-ups, stock dividends, and the like but also preferred participations in assets in excess of preferred stock contributions. In the event of the impairment of the assets representing the capital stock through unprofitable management or otherwise, this method will compel the preferred stockholders to bear their proportionate share of those losses on a dissolution and the common stock will not be deprived of all assets participation[56] —a situation which sometimes occurs where there are asset preference preferreds. It will, of course, be urged that the common stockholders are primarily responsible for the management of the business and that the preferred stock should not be obliged to shoulder any of the losses unless the total assets are insufficient to cover their preferred stock preference. But this argument is part and parcel of concepts that preferred and common stock are generically different and that preference in the distribution of profits either does or should create a difference in the fundamental characteristics of preferred stock, differentiating it from capital stock as such.

[56] Assuming, of course, that there are any assets left for the stockholders.

The development of preferred stock has shown a steadily increasing tendency to subtract this type of shareholders from the voting control of the corporation, accompanied by the attachment to preferred stock of numerous provisions probably derived from bond indentures, including so-called "sinking funds," call and redemption provisions, and various special covenants. It is by no means impossible, in fact, that the growth of the asset preference feature has been influenced as much by the tendency to dress up preferred stock in the trappings of a bond as by the motive previously referred to of protecting the preferred against liquidations unfavorably affecting preferred shareholders. Obviously preferred stock issues cannot be drawn to promise repayment of the principal and still remain stock because of the fundamental difference between owned and borrowed capital. They can, however, provide that all the assets of the company in the event of dissolution shall, after the payment of indebtedness be at the disposal of the preferred shareholders in satisfaction of all or part of their investment. Inasmuch, however, as preferred stock despite its bond costuming is just as much stock as is common, it may be argued that there is no particular reason why business losses should be largely or entirely saddled on the common by any such provision.

Type 8.—Stockholders owning issues belonging to Group 8 occupy an exceptionally favorable position in asset distributions in the same way as do the preferred shareholders with corresponding rights in the distribution of profits. This also, no doubt, is the explanation in part of why the number (10) and proportion of issues possessing this type of asset participation are not large. It does not explain, however, why both the number and the proportion of such issues should be so much below those of the corresponding type of participation in profits, the latter accounting for nearly twice as many issues (18) as the same form of asset participation.[57]

The degree of advantage to the preferred stockholder in this case is, of course, dependent largely upon the ratio in which

[57] Stevens, *Journal of Business*, IX, Table I, 131.

partial residual participations are set up. If the division is in the ratio of 90 per cent to the common and 10 per cent to the preferred, the advantage of this arrangement to the latter is much less than if the reverse were true.

Type 9.—The much more usual method of partial residual participation in assets, as also in profits, is to divide the residue after fixed initial distribution or participations on both the preferred and the common. With qualifications based upon what has been said regarding the merits and demerits of non-preferential and preferential assets participation of preferred stock, there is some attempt in this form, at least in theory, to equalize the distribution of assets between the common and the preferred, particularly if the division of the residual profits is equal as between the two. However, this is subject to qualifications with regard to the fixed initial distributions provided for the preferred and the common as well as with reference to the division of the residual profits. The initial asset preference of the preferred is often, if not usually, so large that it may exhaust the entire divisible assets of the company, particularly in involuntary dissolutions, so that such participation arrangements in practice are far less likely to procure equalization of the preferred and the common stock in asset distribution than they are in the case of the division of profits.

Type 10.—The type of assets participation represented by this single issue has no counterpart in the profit participations so far as recorded in New York Stock Exchange listing applications. The fixed extra distribution to the common after the initial preferred and common assets distribution, however, does resemble the fixed participating dividends from profits payable on the preferred but not on the common after both have received certain fixed initial dividends (Type 5).[58, 59]

The intent of this type of asset distribution is obviously to favor the common as against the preferred shareholder by giving the former an additional distribution from assets before the residual

[58] Subject, of course, to the qualification that the extra *asset* participation goes to the common and the extra *profit* participation to the preferred.

[59] Stevens, *Journal of Business*, IX, Table I, 131.

assets are divided. In theory, it is somewhat the same as allowing the common shareholder a larger share of the residual assets than he would obtain on an equal distribution. However, the former is clearly more favorable to the common than is the latter. If the remaining assets after the fixed initial distribution are only sufficient or less than sufficient to pay the fixed share due to the common on its additional distribution, the latter will obtain the entire remaining assets after the fixed initial distributions. In the latter method, no matter how large the share of the common in any division of the residual assets, the preferred will procure at least a portion of any such assets where they are more than sufficient to pay the fixed initial distributions.[60]

[60] The writer is under great obligations to his capable research assistant, Mrs. Iva Randall, not only for the tabulations contained in this study but also for her extensive and painstaking work in the preparation of the material for the tabulations.

THE FORWARD EXCHANGES[1]

MICHAEL L. HOFFMAN[2]

THE only excuse for a paper of such an elementary nature as this is the absence of any comprehensive discussion in textbooks or elsewhere in the commercial and economic literature of the basic notions and operations concerned with the forward exchanges. Keynes, in 1924, complained of the lack of public knowledge of the market and its functions, but his complaint has brought few if any results in the form of careful and informed exposition.[3] It is believed, therefore, that a general semi-technical discussion of the sort here presented has value. It is particularly relevant at present when suggestions of all sorts regarding the extension or control of the forward market are being put forth, many of them exhibiting a lack of understanding of the market, and of the transactions and operations in exchange futures.

Most of the printed material on the subject is ambiguous as to definition. Writers accustomed to a certain market write in terms of that market without defining the underlying concepts in such a way that they may be applied to other exchange markets. This often necessitates a good deal of time spent in discovering what their terms mean, and also it often leads them to misinterpretations. A few simple definitions will suffice to set forth the meaning of terms to be used in what is to follow. I shall adopt the definition of a forward exchange transaction given by Mr. E. H. Lever:

> A forward transaction in exchange is simply a contract to conclude a spot transaction at the end of a given period of time, the rate at which this

[1] The writer's acknowledgments are due to Dr. M. Palyi, whose constant help and advice were invaluable in the preparation of this paper, and to the Social Science Research Council, for the Pre-Doctoral Fellowship under which the work was largely carried out.

[2] The author is preparing an exhaustive study of the forward exchanges and their relationship to central bank policy, to which these two articles are preliminary.

[3] J. M. Keynes, *Monetary Reform* (New York, 1924), p. 171.

future transaction is to be effected being based on the spot rate prevailing at the original date.[4]

The terms "forward exchange" and "future exchange" will be used indiscriminately to mean documents containing such a contract. The former is the British usage, the latter is common in New York. As to other terms I shall adopt the usage of the London market, unless otherwise specified, as that is the most important center. In London rates are quoted as units of the foreign currency in question per unit of English currency, i.e., per pound sterling, with the insignificant exceptions of the Far-Eastern exchanges, South African pounds, and the Portuguese exchange. A "premium on forward" refers to a rate position in which the forward rate in London on a given currency is below the spot rate. A "discount on forward" refers to the rate position in which the forward rate is above the spot rate. When a currency "strengthens" the London rate on that currency falls; when a currency "weakens" the London rate on that currency rises. When a rise or fall of the rate is spoken of in any market, such as New York, where the quotations are units of the domestic currency per unit of foreign, it will be specifically mentioned that a different meaning is being attached to the terms. It is hoped that this will avoid the difficulty caused by the fact that a premium or discount on forward (or on spot either, for that matter) refers to exactly opposite relative rate positions in London as compared to New York, although the terms mean the same with respect to the relative value of the two types of exchange.

I. FORWARD EXCHANGE MARKETS

1. *Pre-war.*—The beginnings of the forward exchange market are clouded in a probably impenetrable uncertainty. Isolated cases of transactions in which a foreign currency was contracted for as of a future date, the rate being set at the date of contract, doubtless exist as far back as modern exchange dealings are to be found. But it is certain that nothing that could be called a market existed much before 1900. The earliest specific reference

[4] E. H. Lever, *Foreign Exchange from the Investor's Point of View* (London, 1925), p. 45.

I have found to forward exchange dealings is by A. W. Margraff in 1903,[5] who has very little to say on the subject, but mentions the buying and selling of "futures" by the New York banks as though it were a relatively new thing. Hardy says that "quotations of forward exchange rates were regularly made before the world war . . . . ,"[6] but offers no evidence that would indicate in what currencies or to what extent. Edwards says that trading in forward exchange existed before 1914. It was possible, according to him, to secure quotations on dollars or pounds sterling, but these transactions were few in number since rates rarely fluctuated more than 1 per cent above or below mint par; and extensive transactions in futures were confined largely to the Far-Eastern exchanges where currencies were unstable.[7]

These statements are all with respect to the New York market. It is fairly clear from this, and other scattered evidence, that no important dealings in forward exchange took place in that center before the World War. I have been unable to find any reference to the existence of regular dealing in forward currencies in the market columns of the *New York Times* for dates before 1920. It is probable that some of the larger banks did buy and sell limited amounts of sterling, French francs, and possibly German marks to customers who had an extensive foreign trade, and to whom a slight turn in the exchanges would have made a considerable difference. The reason for the lack of development of a forward market in New York is that the type of transactions in which forward purchases and sales of exchange become important were not present to any significant degree. There could be no great speculative interest, since spot rates on all currencies were limited to a fluctuation of approximately 1 per cent allowed by the gold points. Furthermore, New York was not an important international short-term money market before the war, and was not to any extent a creditor on short term. In the continental financial journals of the period New York is often not even mentioned in discussions of money rates and capital movements. It is transac-

[5] A. W. Margraff, *International Exchange* (Chicago, 1903), p. 260.

[6] C. O. Hardy, "Hedging," *Encyclopedia of the Social Sciences*, VII, 306.

[7] G. W. Edwards, *International Trade Finance* (New York, 1924), pp. 84–87

tions in which banks move funds from one market to another to take advantage of higher interest earnings in which a slight turn of the exchanges may become of tremendous importance, and in which removal of the exchange risk would be particularly desirable. The lack of growth of forward exchange trading may therefore be largely explained by their absence.[8] That is indicated by the fact that, apparently, most of the pre-war forward transactions in New York were in forward long bills, where profits from interest are the important item.[9]

About pre-war London very little more can be said. There was some market for forward dollars and forward non-gold currencies, but there were no large institutional buyers interested in forward currencies. The predominance of the pound in international trade and finance had the consequence that London was not interested in securing its conversion rates in advance—contracts were already in terms of sterling. There was no important volume of London funds being loaned for short periods either in New York or on the continent by London banks, and consequently no demand for a forward market to insure the exchange rate upon the return of such funds.[10] When short-term loans were made to borrowers who reloaned on continental markets, the contracts were made in sterling, and the borrower took all the exchange risk and covered it, if at all, on his own domestic market. In addition, the long period of exchange stability between the important world-currencies and the pound gave speculators little encouragement to operate, and without a strong

[8] It should be obvious that, whereas a slight fluctuation in the exchange rate would be of little significance to a commercial firm working on a 10 or 15 per cent profit margin, in a transaction in which money is shifted from New York to London in order to take advantage of a 1 per cent per annum difference in interest rates for a three-month period, a slight strengthening of the dollar in the interim would completely wipe out the contemplated profit—to be exact, a $\frac{1}{4}$ of 1 per cent fall in the New York rate on London. This will be brought out more clearly in the discussion of section III, 2, below.

[9] The rate on long bills naturally fluctuated more than that on sight exchange. Cf. H. F. R. Miller, *The Foreign Exchange Market* (London, 1925), p. 95.

[10] The comparative indifference to continental money markets on the part of London lenders was, I believe, largely responsible for the continuation of a substantial interest differential as between London and continental markets.

speculative interest a forward exchange market is not likely to develop. Certainly without either speculation, commercial demand for accommodation, or large-scale movements and conversion of short-term funds from one currency to another there is no reason for a forward exchange market to exist, and there was, in fact, very little development in London before 1914. Whether the London market had become broader or better organized than the New York market it is impossible to say. One would suppose that, because the London exchange market as a whole was so much greater in both volume and organizational complexity than that in New York, the forward market, too, would have been more highly developed, but the considerations mentioned above make it appear very unlikely that there was any considerable difference between the two in any respect.

The best development of forward exchange dealings before 1914 is to be found on the continent of Europe, rather than in London or New York. The use of the "pension" system of short-term transfers of funds from one market to another had become quite general before the war in Germany, Austria, Switzerland, Italy, and especially France. We will discuss this type of transaction fully in the next article. Suffice it to point out here that it is simply a method of borrowing in a low-interest-rate market and relending in another market at a higher interest rate. An adverse shift in the exchange rate between the currency in which the loan was contracted and that in which the borrower made his profit by relending the funds would naturally wipe out wholly, or partially, the arbitrage profit contemplated. The general movement of funds was from the Paris market to Vienna, Berlin, Zurich, and Milan. In Paris the rate of interest was practically always below that existing in the latter (smaller) money markets. The initiative was sometimes taken by the Paris banks seeking to loan out temporary funds at something better than the market discount rate in Paris, but more often by the banks in the smaller centers seeking profit on the interest arbitrage. The conditions for the growth of exchange hedging by means of forward transactions were, therefore, present in these smaller markets to a much greater extent than in the pre-war London or New York

markets. Moreover, the least stable of the smaller currencies would naturally tend to develop a forward market more than the most stable (i.e., the gold) currencies. We would therefore expect to find that Vienna, Milan, and other centers whose currencies were relatively unstable had a more important forward market than Berlin, Zurich, and Paris, whose currencies were relatively stable as against gold.

Available evidence indicates that the foregoing reasoning is correct. Writers of the period dealing with continental finance and trade were entirely conversant with the theory of forward rates, and with the advantages of having an available exchange hedge in conducting international capital transactions.[11] According to the best information obtainable (admittedly incomplete) there were markets of some importance in Vienna, Milan, and Berlin. The term "market" here must be understood to signify nothing more than a few banks who gave quotations to customers, and to each other, on a very few forward currencies. There were no brokers—indeed, as is well known, the brokerage system has never developed in money markets at all on the continent. But forward currencies were available in limited amounts, and on a narrow market in the previously mentioned countries. Vienna dealt in forward pounds, French francs, German marks, and possibly Milan lire and Swiss and Belgian francs, though no specific reference to the last three was found.[12] Berlin had similar quotations. No mention has been found of a pre-war market in Paris, Amsterdam, or Zurich. It is not likely that these centers bought and sold forward currencies because, as has been pointed out, in the case of Paris, the extensive transactions in short-term funds were almost entirely carried on in French francs, while in the case of Zurich and Amsterdam the close connections between these markets and the Paris market precluded any great exchange risk on "pension" dealings. Suntych says definitely that

[11] See, e.g., P. Sztankowits, "Preisbildungstheorie der Zeitdevisen," *Österreichische Handelsschul-Zeitung*, I, 479–87 (new ser., 1909); A. Suntych, *Die Technik der Wechselpensionen* (Zurich, 1911); or Wiener-Stoerk, *Arbitrage* (Leipzig, 1907).

[12] The first three are all mentioned by Suntych, *loc. cit.* for both, the Vienna and Berlin markets; also by Sztankowits, *loc. cit.*

Switzerland (Zurich) did not use forward exchange, and implies in his discussion that Paris did not.[13] In Milan, on the other hand, persons borrowing in Paris were subject to considerable exchange risk, and though the market was less important than Vienna, and even than Berlin, there were offerings of French francs, Berlin marks, and Belgas, and forward transactions were by no means unusual phenomena.

The market for exchange futures before 1914, therefore, can hardly be said to have advanced much beyond the stage of occasional and relatively small-scale operations. It had developed relatively more in those countries that were short-term debtors on an important scale than in New York, Paris, or London, and it had developed relatively more in those countries of the first class who were on a controlled or incomplete gold standard than in those, like Switzerland, whose currencies were closely tied to gold, and thus to the pound and the French franc.

2. *Post-war.*—The real growth of an international forward exchange market is a post-war phenomenon. It is customary to say that it is due to the unstable exchanges existing after 1918, and to the necessity felt by merchants of making their prices certain in advance. However much the commercial demand for exchange insurance may have had to do with it, elaboration of the point that unstable exchange rates leads to a demand from all sides for a forward market would seem superfluous (though this is all most textbooks do in discussing the forward market). The tempting profits to be had from speculation probably had as much to do with the actual increase in volume of forward transactions as anything else, but the market was maintained, following the return to relatively stable currencies, both by commercial demands and by the demands of the new international interest arbitrage business. This latter was apparently of predominant influence in London.

We shall not attempt to describe in detail all the forward exchange markets. The New York market may be omitted for two principal reasons. First, there has not yet been in New York any important forward exchange market established. Transactions

[13] Suntych, *op. cit.*, p. 9.

are common, but there is no special organization to handle them, and the volume is of small proportions compared to the London forward market, though it is steadily becoming larger. The use of the forward hedge for commercial purposes has, until very recently, never "taken" in America, and its use in interest arbitrage is not of the important magnitude one would expect. Second, such "market" as there is is closely enough patterned on London's brokerage system that it is safe to say no essential organizational differences exist. It is a telephone market of course. The only regular quotations which are published are those of the *Wall Street Journal*, and this paper has carried them only since 1935. I am informed by Mr. Gomory, of the Manufacturer's Trust, that there is at present (summer of 1936) a good market for sterling, French francs, and Canadian dollars, with a small market for Belgas, Swiss francs, and the Scandinavian currencies. The New York market may therefore be practically dismissed, and attention centered on the London forward exchange market.[14] Following this, certain markets of quite different types will be discussed.

The London forward exchange market was not premeditated. It is simply the result of a natural extension of the ordinary foreign-exchange system to include forward currencies. The general methods were familiar before the war and were merely applied on a larger and larger scale as the necessity arose. How much of the increase in volume of transactions and number of currencies dealt in was due to the activities of speculators and how much to the demands of commercial parties it is impossible to state, nor is it particularly important to know. The first pub-

[14] I do not mean to imply that the New York forward dealings are unimportant, or that the forward rate is not significant. There has been a considerable increase in commercial use of the market since 1931. Also, the rate is of no small influence on the movements of short-term funds, and the Federal Reserve Board has lately taken quite an interest in its behavior. Cf. *Federal Reserve Bulletin*, July, 1936, pp. 510–11.

The recent publication by the Treasury of figures for both forward and spot exchange transactions, and for outstanding forward contracts, gives us more information about the New York market than has ever been available heretofore. These figures have not yet been fully analyzed, but they undoubtedly contain much interesting material.

lished rates that I can find are in the *Manchester Guardian* for June 27, 1922, but rates had been quoted by many dealers for several years before that date. There is a table of rates for one-month forward transactions on New York, Brussels, Paris, Berlin, and Milan. Detailed quotations of rates have never been given by the *Times*, although since 1923 the daily market column has generally mentioned the extent of the discount or premium on forward dollars and Paris francs. The *Economist* began quoting forward rates for the leading currencies only in 1933, but now has the most complete quotations available outside the daily market services. The forward market has, therefore, become an established institution. H. W. Phillips, a practicing broker on the London exchange market, writing in 1925 has this to say about the size of the markent:

> It [forward exchange] is bought and sold just as freely as ordinary "spot" exchange, and of recent years dealings in forward exchange have increased so considerably in number and volume that a very large market exists, in which huge amounts are turned over daily[15]

In another place Phillips estimates that the amount of forward transactions carried out is about 60 per cent of the total deals on the exchange market.[16] This seems extraordinarily large, but this is the only estimate I know for the London market. Phillips mentions the existence of quoted rates, as of December 31, 1924, on the following centers: New York, Milan, Paris, Brussels, Oslo, Copenhagen, Zurich, Madrid, Berlin, Helsingfors, Prague, Vienna, Athens, Belgrade, Sofia, Turkey, and Warsaw. Very little market is said to exist for the latter two currencies.[17]

The forward market in London exhibits the same characteristics as the spot market, the division of labor between brokers, who bring buyers and sellers together, and the dealers, who operate on their own account and buy and sell from customers at rates determined by the state of the market as presented to them by brokers, being identical with that on the spot market and similar to that on the domestic money market.

[15] H. W. Phillips, *Modern Foreign Exchange and Foreign Banking* (London, 1926), p. 132.

[16] *Ibid.*, p. 141. [17] *Ibid.*, p. 287.

At the broker's end of the market there is a telephone switchboard devoted to the forward market. Through this switchboard the broker's agents are in direct contact with dealers in from ten to twenty of the important banks. Each dealer, in turn, is able to reach by phone a dozen or more brokers. This makes an interlocking network of telephone contacts which constitute the physical machinery of the "market." The brokers are the intermediaries between those dealers who want to buy and those who want to sell. A broker will quote a forward rate on any currency for which he is able to find both buyers and sellers. These brokers thus "make" the market, and it is on their quotations that the bank dealers depend in calculating rates of buying or selling for customers' accounts. The dealer, naturally, buys from the broker who offers him the cheapest rate. Competition is very keen, and transactions are said to take place faster on the London exchange market than on any other market in the world. As a rule the quotations of brokers are confined to six or seven major currencies for which there is a steady demand—the French franc, the New York dollar, the Berlin mark, the Belga, the Dutch guilder, the Zurich franc, the Milan lire, and Spanish pesetas being customarily quoted. If the volume of forward business is large, there may be special men in both broker's and dealer's offices who do nothing but deal in forward currencies.

There are dealings in currencies not quoted by brokers. Rates on small countries are quoted to customers by the big joint-stock banks 0.01 per cent either side of par against all buyers or sellers. They do not cover these forward sales (or purchases) by offsetting forward purchases (or sales). They buy in spot to the extent of their forward sales, or sell spot to the extent of their purchases. This naturally means that balances are acquired in foreign countries, and are often built up to considerable dimensions. The big banks do this not because it pays them from the interest point of view (although it may, if foreign deposit rates are sufficiently higher than similar London rates), but because important balances abroad bring reciprocal business.[18] This sort of transaction also keeps the banks in a position to lend other banks these cur-

[18] *Ibid.*, p. 143.

rencies again with the turn of the spot exchange rate in their favor. This frequently occurs, and there is no limit to the extent to which the banks could deal in this manner except their practically unlimited sterling resources—though, of course, if the demand for forward currencies which are at present of little importance became great, they would get onto the ordinary market and their prices would be subject to the competitive leveling process. In addition to making substantial profits for themselves from holding these currencies, the banks in addition perform the useful function of accommodating merchants who require exchange insurance in the smaller unquoted foreign currencies. Only the big banks do this, and there is reason to believe that they have taken to the practice only since the development of their foreign acceptance departments, since previously there would have been little reason for them to hold foreign balances of any appreciable amounts.

Although the London banks and other money-market institutions are the principal dealers in forward currencies, there are occasions when others do so. Speculators may enter the market directly, or large merchants may make uncovered transactions, counting on fairly regular accumulations of foreign currencies to insure them against loss from a turn in the rates. Lorusso speaks as though this were a usual thing, but I do not find it mentioned elsewhere, and it is probable that the overwhelming majority of all operations are conducted through the banks and the regular dealers in foreign exchange.[19]

On the customer's side of the market a rough classification may be made of the sources of supply and of demand for forward exchange. In general, sellers are persons who for some reason have acquired, or are about to acquire, foreign currencies as of some future date and want to convert them into pounds at a known rate; and speculators. Buyers of forward currencies are persons who for some reason or other have contracted or are about to contract obligations in terms of foreign currencies as of some future date, and want to convert pounds into the currency at a known rate; and, again, speculators betting on a fall in the rate.

[19] E. Lorusso, *La tecnica dei cambi esteri* (Instituto di Ricerche Tecnico-Commerciali, Ser. I, No. 6 [Milano, 1932]), p. 256.

The selling side consists primarily of: (1) Exporting merchants who have sold or are about to sell goods for foreign currencies to be delivered in the future. (2) Bankers, or others, taking advantage of higher interest rates abroad who want to remove the exchange risk connected with repatriation of their short term funds at the termination of their loan contracts. (3) Persons selling securities abroad. (4) Speculators.

The buying side consists primarily of: (1) Importers who have contracted, or are about to contract, for goods in terms of foreign currencies to be delivered in the future. (2) Bankers, or others, moving funds from abroad to London who wish to withdraw them again after a short period, and who want the exchange risk covered. (3) Persons having interest payments or principal payments falling due in foreign markets, or to foreign creditors, or who are about to make large foreign investments. (4) Speculators.

It is difficult to estimate the proportions in which the various groups participate in the market. It is customary in the texts to speak of the merchants as the main ones concerned, and to belittle the speculative and financial aspect. Most of the writers merely assume that because merchants are logically interested in securing their terms of exchange in advance, they are largely interested in the forward market. From market literature and other non-textbook sources, however, the writer is led to believe that as a matter of fact comparatively few merchants know anything about the forward market. Probably more English merchants make use of it than merchants of any other country, but even there the market is not old enough, and is too little understood by most people, to be of as wide service as logically it might. Mr. Keynes is probably substantially correct when he says that:

> merchants do not avail themselves of these facilities to the extent that might have been expected. . . . . There are few financial topics of equal importance that have received so little discussion or publicity.[20]

The chief volume of transactions remains of the financial or purely speculative sort, with the latter type waxing in importance during periods of exchange instability, and waning during relatively stable periods.

[20] J. M. Keynes, *Monetary Reform* (New York, 1924), p. 171.

Since the debacle of the gold standard and the advent of innumerable exchange restriction devices (particularly by the governments of continental Europe) the number of currencies dealt in on the London market has, of necessity, shrunk. The principal quotations are still the same as noted above, but most of the smaller currencies have disappeared altogether from the market, and the removal of certain types of German marks has narrowed the market for that country's currency (or currencies, as things now stand) appreciably. The essential set-up of the market has not, however, undergone any great alteration, and it is not the purpose of this section to go into detail about the changes in the type of transactions taking place, or in the money market as a whole.

Turning to the continent, we find several interesting post-war developments. On the negative side the most important, of course, is the decline of Vienna. This calls for little comment however, since the decline of the forward market is only an incident, and a minor one, in the general collapse of the financial and commercial predominance of that once great European capital. Vienna's market, however, still exists, and it can be safely said that forward exchange transactions constituted a relatively more important item in the market after the war than before. The inflation led to runaway speculation in the currency, and to a lot of forward selling of the currency. The mistrust of the currency continued for some time following the stabilization, and exchange insurance continued in favor among the important commercial dealers. Since this fear of the currency was so pronounced, however, it often led to contracting entirely in Swiss francs instead of to forward transactions in shillings. If the currency is very suspect, no one but a speculator wants to convert foreign assets into domestic money no matter how sure of the rate of exchange he may be in advance. Austria's very recent, and very commendable, achievement in abolishing exchange restrictions, while her loftier neighbors are clamping on more and more such hindrances to trade, means that the Austrian currency is open to regular commercial forward exchange dealing to a much greater extent than in the recent past, and that this should lead to a rebirth of

the Vienna forward market and of the Vienna market in general is by no means unlikely. We are unable at present, however, to state definitely whether or to what extent regular forward exchange dealing has been developed recently in Vienna.

A lot was said about forward exchange markets shortly after the war. The value of an adequate hedging market as an instrument of stabilization of trade in the face of wildly fluctuating currencies seemed clear to many financial experts very soon after the breakdown of the pegged war exchanges. It was hoped that a comprehensive program of development of forward markets for all important financial and trade centers would be undertaken by the governments. The Genoa conference of 1923 included in its financial resolutions a statement to the effect that the needs of trade would be furthered if the central banks of the world undertook to establish forward exchange markets in their respective centers for the use of merchants.[21] There were, in fact, some systematic attempts following this to enlarge existing forward markets and to make their facilities available to a wider range of traders. The motive behind the official and semi-official interest in the movement was solely to help commercial persons. Presumably, financial interests were able to find such exchange insurance as they desired under then existing arrangements.

By far the most perfectly organized market for dealings in forward exchange is that of Antwerp.[22] This city had, before the war, developed a highly efficient system of guaranteeing settlements of forward contracts in coffee, rubber, etc. After the war merchants experienced great difficulty in obtaining satisfactory future contracts in foreign exchange. As a result the Caisse Internationale de Liquidation et de Granatie des Opérations en Marchandises created a market for forward exchange on March 1, 1920. The market holds two sessions daily in a room at the Antwerp Stock Exchange—from 11:45 to 12:00 and from 3:00 to

[21] *Ibid.*, p. 146. The resolution was No. 2, under the heading "Exchange."

[22] The Antwerp market is described fully in S. H. Cross, *Commerce Reports* (U.S. Department of Commerce; Bureau of Foreign and Domestic Commerce), November 26, 1920, No. 278, pp. 890 f.; and less fully in G. W. Edwards, *International Trade Finance* (New York, 1924), pp. 90–93.

3:30. Currencies quoted are pounds, French francs, New York dollars, Florins, and German marks.[23] The currencies are traded in fixed-quantity units, standardized at £1,000, Fr. 25,000, $3,000, Fl. 5,000, and M. 50,000 respectively. Prices are quoted in Belgas, and deals are in multiples of the foregoing units, never in odd lots. Initiative on the market is taken by the seller, who announces that he has a given number of contracts in a given currency for a certain fortnight of any future month (the periods are also standardized—to fortnightly periods). A buyer, if satisfied with the price, says "agreed," or if not satisfied, offers to purchase at a lower figure. All such offers are chalked up on a board, together with prices at which contracts have actually been concluded. The official prices are those agreed upon in the last concluded contracts of the day. If there is no offer, purchase, or sale made during the session of a given currency for a given fortnightly date within ninety days, the quotation is arrived at by arbitrarily harmonizing it with other quotations for the same currency of different maturities, on the theory, supported by experience, that a three months' rate is approximately three times the one month's rate for the same currency, etc. If no actual contracts have been made, but offers and bids have been stated, the price is put at the average between bid and asked prices. The quotations are edited by a committee of three brokers registered on the Caisse. At the close of each session contracts for delivery are registered at the Caisse Internationale.

This institution can accept contracts of any reputable firms, Belgian or foreign, which, if not located in Antwerp, must formally establish an office there at the address either of a correspondent or at the Caisse itself. This insures prompt delivery of notification concerning margins, etc. A broker sends a client a purchase order which the latter signs. The customer then receives a contract from the Caisse Internationale covering the transaction. All contracts both of buyers and sellers are with the institution, not with each other, and the institution is thus legally liable in

[23] This list of currencies was given in 1920. At present, German marks have undoubtedly disappeared, due to the absence of freedom respecting the use of the mark (i.e., the blocked-account system now in force).

case either of the original parties fail. Purchasers of forward exchange put up margins with the Caisse Internationale, and if the rates go against them they are obliged to increase these margins. The Caisse charges Fr. 2.50 per unit for its services. This necessitates the holding of adequate cover in the shape of the deposits put up as margin. Both original deposits and further margins may be in cash, in which case they receive interest, or in the form of mortgage bonds, other bonds, warehouse receipts, or any other form of recognized security. The brokers get commissions on all transactions of Fr. 0.05 per thousand. The delivery of spot exchange and collection of the purchaser's check mark the execution of the contracts. While in general the seller has the right to determine upon what day of the specified fortnight he will place the required exchange at the disposition of his customer, the latter may, if his business demands it, require it at an earlier or later date—but in that case he has to pay the loss of interest to the seller. For dollar purchases, as an example, the seller notifies the Caisse twenty-four hours in advance that he is ready to deliver, and then is told what New York bank the purchaser wants the dollars to be put into. The seller then cables New York, to his correspondent, to place the sum at the purchaser's credit at the indicated bank. A certified copy of the cable is submitted to the Caisse by the seller, who then receives payment in Belgian francs.

Such methods permit extensive arbitrage operations in the purchase or sale of one sort of money in order to furnish or secure another which is in momentary demand. These operations, carried on to a large extent in any special fortnight, may comprise several sales and purchases. It may also happen, of course, that for some reason the execution of a contract is impossible or unnecessary. In that case, unless the absolute cancellation is feasible, the contract must be liquidated by a reverse operation. When one party fails to live up to his agreement, the Caisse Internationale has the privilege of canceling the contract, of selling the exchange consequently in hand, and of crediting or debiting the responsible party according to the results of the sale. An honor committee judges all disciplinary questions, and disagreements

are settled by arbitration. As has been noted above, the Caisse Internationale is legally the guarantor of the contracts and their execution.

From this brief outline it can be easily seen that the Antwerp market is quite different from the London market, and is of what may be called the "continental type" of market, in which there is a definite, organized, clearing institution to which all brokers and dealers are related. In addition to this, the London market is extremely decentralized, and every contract is made between the parties actually concerned, with no external guarantees or regulation. The London market, is therefore, like the London money market, and is characterized by individual dealers contacting many brokers who in turn each contact many dealers. There is a great deal more room for individual activity, and a great deal more pressure of competition in this sort of a market. There is, of course, no "official price" in London. If no deals are made, there is no price.

Available information is meager concerning other continental forward exchange markets. In France, the government's anxiety about exchange fluctuations led to the creation on February 25, 1924, of a new department in the French National Bank of Foreign Commerce, which is affiliated with the Bank of France, for the purpose of buying and selling exchange futures.[24] The department is called the "office for offsetting and liquidating exchange future operations." It offers special facilities to merchants who desire to cover their contracts for future foreign sales or purchases by selling or buying forward exchange. The government went to considerable effort to persuade merchants to make use of these facilities. Mr. Louis Pommery, chief of the economic section of the French National Bank, in a speech in Marseilles, whither he was sent as a special envoy by the government, urged merchants, because of the inevitability of fluctuations in the exchanges, to make a regular practice of covering their operations forward. He explained the set-up of the new office in the Bank

[24] The information about the French market is derived from *Commerce Report* (U.S. Department of Commerce; Bureau of Foreign and Domestic Commerce), July 7, 1924, No. 27, p. 49, and was submitted by W. C. Frost, Commercial Attaché at Versailles.

and indicated ways in which Marseilles could use its facilities.[25] The success of the new department must have been considerable, because trading in forward exchange is now quite usual in the Paris market, although it has never developed as in London.

In 1921 the Dutch government set up the Exchange Bank, Ltd., with a capital of Fl. 5,000,000 to be a terminal market in foreign exchange and to conduct and act as a market for "all operations connected therewith."[26] Presumably this would include forward transactions, as Florins are among the currencies actively dealt in on all the other markets.

There are some dealings in forward exchange in almost all the continental countries. Berlin banks have done a good-sized business of this sort, as they did before the war. There is, however, no real market. There are only a few large banks, and they make rates for their customers, covering on the spot market or with each other. Milan still has a market of some importance.[27] It is not, however, very broad, nor is it as highly organized as that in Antwerp or Paris. In smaller centers, like Madrid, Prague, Warsaw, and Belgrade, though forward transactions in the domestic currency sometimes take place, transactions can be so easily made in terms of a third currency, such as the pound, that use can be made of the large and very efficient London market.[28] If the transaction is with Great Britain, as a large number naturally are, the pound is not even a third currency. This possibility removes the necessity for a domestic forward market where the volume of such transactions is very small.

Recent developments in international exchange dealings of all types have been colored—in fact dominated—by the problems arising from the myriad types of exchange restrictions put into

[25] *Ibid.*, p. 49. [26] *Commerce Reports*, May 26, 1929, p. 1154.

[27] Lorusso, *op. cit.*, p. 268, refers to this market.

[28] A transaction in a third currency involves, for an exporter who is in Madrid, let us say, and who is expecting payment in Greek currency, the forward sale in London of drachmae against pounds, and the coincident purchase, in London, of forward pesetas. This indirectly makes the contract in terms of drachmae fixed, for the exporter, in terms of his own Spanish currency. For a large exporter who would normally have contact with London banks or their branches anyhow, this is a fairly simple operation—much better than trying to use inadequate facilities at home. A similar example can easily be imagined for the Spanish importer.

force by the various governments during the past five years. Under conditions where the value of a currency depends upon the permission of the government from the holder to use it, or the refusal of the government to allow him to use it, a forward market cannot exist. There can be no speculation, because not even the most daring speculators will bet upon the whims of a finance minister. There is no incentive to use the forward market in connection with the shifting of short-term funds, because the possibility of recovering the investment no longer depends solely upon the natural fluctuations in exchange rates, but upon the particular rules of the foreign government regarding such deals. The stand-still agreements and the very heavy losses of creditors, in Austria and Germany especially, have acted as additional discouragements to investors. Without speculators and without the interest *arbitrageurs* the forward market cannot exist, and it has largely disappeared for German marks and for the smaller European and South American currencies. Certain of them which belong to the sterling bloc may still be partially covered for commercial and financial purposes by means of the pound, but, on the whole, the forward market in London, and more especially on the Continent, is suffering from exchange restrictions to a marked degree.

The most discouraging thing about the present situation is that there is apparently no decrease in the number of countries applying such restrictions. Only Austria and one or two small South American countries have taken any steps in that direction. Once started, it is nearly impossible for governments without huge gold reserves to extricate themselves from the mess that abandonment of a free exchange market gets them into. Since the apparent result of restrictions is to decrease rather than increase the gold reserves of the countries applying them, not much hope of early re-establishment of smoothly functioning exchange markets can be offered. Until spot rates are subjected again to the customary influences of market forces, no forward market can be expected to function. The opinion held by some that under present circumstances central banks could provide the facilities that have dried up under the restrictions reveals nothing more than a mis-

understanding of the nature of the forward market. It would be a ridiculous anomaly for a central bank to provide traders with insurance against exchange fluctuations fostered by its own positive policies, and without breaking down the whole blocked-currency system the bank could not make a free market of forward currencies. No one will buy a currency if he does not know for what purpose the funds, when obtained, may be used—or, as in some cases, he cannot even accept delivery at the termination of the contract. It is fairly safe to say that return of a broad forward market in a large number of currencies is impossible until exchange restrictions of the current type are eliminated. That this is a detriment to the increase of international trade, and that a broader and more widely used forward exchange market would be an encouragement to international trade, seems self-evident. But such considerations are apparently not influential in guiding the day-to-day policies of European governments.

II. TRANSACTIONS IN FORWARD EXCHANGE

The basic idea of the forward exchange transaction is that a person who contracts to receive (or pay) a given sum in a foreign currency at some future date, by selling (or buying) that currency forward—i.e., by making a contract to deliver (or to purchase) that amount of the foreign currency at a certain price in terms of his own currency on the future date in question—may assure himself that the amount he is to obtain from (or pay out on) his original contract will not change in terms of his own currency because of alterations in the exchange rate between the date of making the original contract and that date on which the foreign currency is to be received from (or payed to) the other party to deal. The closest analogy to the forward exchange transaction (I am, of course, speaking of all except speculative transactions) is the hedge on the commodity markets. There are significant technical differences as to the limits of rate movements,[29] but from

[29] The forward transaction would be exactly like the hedge if there were a forward gold-export point but no forward gold-import point, if the price of spot exchange were always at the export point, and if this point were variable (i.e., if the price of gold shifted). Of course this situation could never really arise on the exchange market. On the forward market there is, on the gold standard, both an upper

the point of view of the persons buying and selling the contracts the forward exchange transaction is simply a hedge against changes in the price of other currencies, unless it is purely speculative.

1. *The banker's operations.*—It has been noted in section II that the forward exchange market (from this point on the London market is always referred to unless otherwise stated) is made by dealers in the banks, who work through brokers specializing in such business. The dealers receive orders from customers to whom they must be prepared to quote a rate. It is important to understand in some detail the manner in which the bank dealer operates.

On a large order, the dealer quotes his customer an "all in" rate. This is, briefly, what happens:[30] The dealer, let us say, sells his customer forward dollars. He immediately covers his sale by buying spot dollars. He does this because: (1) the spot rate is the basis on which he makes his forward rate when he quotes an all-in

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and a lower limit to the difference which can exist between the prices of spot and forward exchange (see section IV below for details). And, on the gold standard, there is a limit to the possible variation in the spot price. On the commodity markets there is no limit to the variations in spot prices (except such things as the daily limit on fluctuations in the price of wheat, which are of only temporary importance). Nor is there any limit to the extent to which the price of futures can remain below the price of spot commodities. There is a limit to the extent to which the price of commodity futures can remain above the price of spot commodities. This limit is set by the cost of insuring and storing the good until the future date in question. If the price of wheat futures, for example, gets too high, it will pay someone to sell futures and cover his sale by buying and holding wheat till that date. This corresponds to the situation on the exchange market mentioned above, with no gold-import point, but a gold-export point for the domestic currency. The difference is due to the fact that the price at which gold can be obtained at any future date is known beforehand; it is set by the mint par. And the price of forward exchange cannot go below the spot price to such an extent that it would be profitable to buy forward exchange, hold it till maturity, convert the currency so obtained into gold at the foreign mint, and ship it home. The price of wheat is not known in advance.

When the gold standard is not in force, forward exchange is limited by neither export or import points, and thus differs from commodity futures on the other side of the fence, though the situation becomes somewhat more analogous because of the then present variability in spot prices. Cf. C. O. Hardy and E. S. Lyon, "The Theory of Hedging," *Journal of Political Economy*, XXXI (1923), 285–86.

[30] Phillips, *op. cit.*, p. 133 ff., is followed here. I am taking the liberty of using his arithmetical illustrations, as they are adequate, and constructing new ones would involve a lot of unnecessary labor.

rate; (2) the spot market is very sensitive, and may move against him; (3) if he went into the forward market immediately to buy forward dollars for a particular future date he would have trouble because the men making him a rate would have to be watching two markers at once, and the mental calculation of spot and forward rates plus brokerage and expenses cannot be made in such a short period as is necessary when the customer is on the other end of a telephone wire. But the forward market is not for nothing. To repeat, as soon as he has sold his customer forward, he buys spot dollars. Suppose that when he sold the customer forward the dollar rate was 4.65 to 4.65¼, and the rate on forward dollars ⅛ to ¼ over spot for two months (the forward rate is always quoted as so much over or under spot, and not as a separate rate). The dealer mentally calculates as follows:

I can afford to sell spot dollars at	4.6575
Plus the benefit of the forward rate in customer's favor of	.00125
	4.64875
Less expenses of brokerage etc.	.000625
Net rate to customer	4.648125

The forward rate of ⅛ to ¼ over spot is just a difference to be added to the spot rate, or subtracted, in case the rate is at a premium. Since the forward rate was at a discount—i.e., in favor of the buyer of forward dollars—the bank had to give the customer a difference for the transaction. After this, the dealer buys in spot dollars to the amount of the sale. He then, when he has time, sells these spot dollars again, and buys two months' forward dollars. The dollars he has bought as coverage will not be wanted for two months, and, as there is a market for them, he can recover his sterling funds by selling the dollars forward, and on the date in question he will receive dollars which he will in turn pass on to his customer. The customer, of course, is out of the transaction at once. He has assured himself that he will be able to acquire dollars in two months at the rate of 4.64$\frac{1}{16}\frac{3}{8}$. The third step the dealer takes is, in a sense, a double transaction. The bank is selling spot dollars for cash (sterling), and contracting to receive dollars at the

end of two months at a fixed rate. In tabular form the deal looks like this, if we assume the amount to be $135,000:

Transaction	Transaction
(2) Dealer buys $135,000 @ 4.65 (from bank B)	(1) Dealer sells $135,000 2 mo., to customer @ 4.64$\frac{7}{8}$
(3) Dealer buys $135,000, 2 mo., @ 4.65$\frac{3}{8}$ (from bank D)	(3) Dealer sells $135,000 spot @ 4.65 (to bank C)

Care must be taken in interpreting the third transaction. The dealer in the bank in question, A, does not "buy" two-months dollars in the sense that he transfers actual cash at once. I have given three separate banks in the illustration in order to emphasize this point. When a forward transaction is made, no cash passes until the date of maturity. The bank A has a liability to bank D, but it receives actual cash from bank C for the spot dollars, which offsets its cash outlay in transaction (2). It therefore retains its cash position intact. Likewise, the customer pays sterling to the bank only at date of maturity, not at the date of making the original contract.[31] After the third transaction the bank has no position in the market. It has made five-eighths of a point in the rate on $135,000, or $832.50. This is an abnormally large profit, and is given solely for purposes of an easy illustration. The bank customer rate would never be under spot when the market rate was over. Competition forces this profit to a fairly narrow margin. If the forward rate becomes heavily influenced by speculators, the banker widens his margin of profit, because of the possibility of great changes in the rate within a very short period —a few minutes, perhaps.

The foregoing illustration is in terms of a fairly large block of currency dealt in. Usually, of course, the amounts are of various sizes, small and large. The bank makes no attempt to handle each transaction individually as described. The dealer accumulates his forward sales and purchases. He may find that a large number of his sales may be offset by his own purchases. That is, he may have contracted to deliver $3,500 on a certain date, and also have contracted to receive $3,500 on the same date. If so, he does not need to enter the forward market at all. But usually this will not happen in any large percentage of transactions. The

[31] Phillips, in his description, *loc. cit.*, never seems to make this point clear.

dealer therefore makes one large transaction on the forward market to cover several small sales, or purchases, on customer account.[32]

A bank keeps special accounts for its forward transactions. There is a forward purchase ledger, and a folio for each customer showing the amount, rate, and maturity date for each purchase, so that the amount running for each customer is immediately apparent.[33] A separate ledger is kept for forward sales. These are what is known as "currency" items—i.e., items in which some

[32] A special form of transaction, known as the "optional" transaction, deserves some mention at this point. These transactions often take place, both purchases and sales, with collection or delivery dates at the customer's option. For example, a bank may buy three-months dollars and give the customer an option of delivering the dollars any time after two months have expired. Assume that the forward rate is at a discount. The bank has to cover this purchase by a sale of spot dollars, and then a purchase of spot dollars and a sale of forward dollars, as outlined above. It cannot be sure of having dollars from the customer until three months from date, although it may get them earlier, and so has to sell at the full three-months discount. It can, therefore, only afford to pay the customer the three-months price, which, of course, is lower, in terms of sterling, than the two-months price if the rate is at a discount. The customer has to pay for the privilege of delivering the currency any time up to three months from date, even though he may actually expect to have the dollars in hand at the end of two months. On the other hand, if the bank is the seller, at the customer's option to collect the dollars at any time after two months, the dealer must provide for this contingency, and therefore, when he finally covers the deal on the forward market, must buy two-months dollars, which are higher, in terms of sterling, than three-months dollars. It must, therefor, charge the customer the two-months rate. The bank gains in the first instance if the customer delivers the dollars ahead of time, because it earns interest on them; and it gains in the second instance if the customer does not claim the dollars until the later date, for the same reason.

If the forward rate is at a premium the reasoning is the same. In this case, however, the three months rate is lower than the two-months rate, therefore the bank sells forward at the lower rate (the higher price) and can afford to buy from customers at the lower rate. Likewise, it buys forward at the two-months rate, which is higher, and can afford to sell at the two-months rate to customers who wish to buy forward at an option such as that used in the example above. The customer, therefore, benefits from making an optional contract. The exact reasons underlying these results will be seen more clearly after the theory of forward rates has been fully developed.

These conclusions are stated dogmatically, and are, of course, only more or less true depending on the state of the market. They are true when the banks take absolutely no risk, and, in the case of forward premium, pass all the benefits on to customers. Under competition this tends to be the case.

[33] A good discussion of the bookkeeping technique, in great detail, is A. G. Sugg, *The Arithmetic and Practice of the Foreign Exchanges* (London, 1929), p. 51 f.

currency other than sterling is the unit—and therefore figure in a correspondent's account, which is an account kept to show the bank's position with its foreign correspondent. But these do not go into the regular account, because a forward item does not come into the account abroad (with the correspondent) until the contract has matured. So a separate account is run called "correspondent's forward purchases," and another called "correspondent's forward sales," one for each currency involved. The balance on the dollar purchase account shows how many dollars the bank has coming to it at various dates, and the sterling figures against the balance show the total liability on these contracts. The balance on the forward-sale account shows how many dollars it has contracted to deliver on various dates and the amount of sterling funds due from customers. The totals should be, and generally are, very nearly the same in both accounts. If the bank has more than one correspondent in a foreign center, sales and purchases must be watched to see that purchase is directed to the same account from which a sale is made, in order to avoid needless overdrafts. When a purchase contract matures the amount put on the forward account must be reversed, and the exact amount being delivered is put into its proper currency account, as it is now actually on the books of the correspondent abroad.

When a customer cannot deliver a currency the bank may renew the contract. It can do one of two things in this case. It may close the old contract entirely and make a new one on the basis of the prevailing rate. The customer pays the difference (if any) or gets the advantage (if any) but at the expiration of the new contract he makes up his loss, or loses again by exactly the same amount. Or the banker may merely adjust the original rate in accordance with the expense incurred in closing the contract and making the new one. If it cost him ten or fifteen centimes, say, to buy the spot and resell forward, he may add ten or fifteen centimes to the old contract rate, and not settle any difference with the customer until the whole deal is finally concluded.[34]

London banks generally require a 10 to 25 per cent deposit in sterling on the amount of the forward transaction. It is some in-

[34] Sugg, *op. cit.*, p. 54.

surance against the collapse of contracts which the customer might find it impossible to fulfil. The margin is watched and kept high enough so that it covers the difference between the current rate of exchange and the rate stipulated in the contract, if the rate is currently moving against the customer.

Every bank which deals in forward exchange has a limit beyond which it will not go in dealing with other banks and houses—even though they may be of undoubted credit. The amount of outstanding transactions is carefully watched. The extent of the banker's liability must not be overestimated. He is only the loser in the case of a defaulting seller of forward dollars, say, by the difference between what he has to pay for spot dollars to cover his own forward sale and what he gets from this sale. He would gain if the rate shifted in his favor, but in such a case there would be no reason why a customer who had sold the bank forward dollars would default. He could buy spot dollars himself and deliver them on his forward contract at a profit. It is only in cases where the rate moves against the customer that a default is likely. Then the bank does not lose the entire amount, but only the above-mentioned difference.

The periods for which forward contracts are made are generally one and three months. Many are made for special dates, such as December 27, ends of months, etc. Some are made for irregular intervals. York says contracts range from "several days to several months, but at times for a year or more."[35] This may have been true when he wrote, but it is not true now. Rates are never quoted for more than three months, and I understand that in New York it is impossible either to buy or to sell forward exchange for as long a period as six months.[36] I find no evidence that contracts were ever made for more than three-month periods in the London market. It is safe to say that the term of forward exchange contracts is from one to three months, with exceptional cases of shorter or longer periods.

[*To be continued*]

[35] T. York, *International Exchange, Normal and Abnormal* (New York, 1924), p. 81.

[36] Professor Viner is of this opinion, as he told me on several occasions.

BOOK REVIEWS

Plan or No Plan. By BARBARA WOOTTON. New York: Farrar & Rinehart, Inc., 1935. Pp. 360. $1.60.

This volume is a British economist's contribution to the growing stream of literature dealing with the problem of creating a more efficient economic system in the Western world by resort to national planning. It is, however, to be distinguished from the general run of expositions on national planning or rationalization in that the author has undertaken the ambitious task of analyzing in minute detail the weak and strong features of the several prevailing economic systems. Largely the study is confined to a comparison of the unplanned system of price economy as found in such countries as the United States, Great Britain, and France with the planned economy of Soviet Russia. Minor reference is made to the current economic structures of Mussolini's Italy and Hitler's Germany.

The scope of the book is evident at once from a glance at the Table of Contents. It opens with a chapter on "The Nature of an Unplanned Economy," which is followed by one on "The Nature of the Russian Planned Economy." In two succeeding chapters the author presents "The Achievements and Possibilities of an Unplanned Economy" and "The Achievements and Possibilities of a Planned Economy." In a chapter entitled "What Next?" the author faces and attempts to answer the question, "What are going to be the future developments of these systems, and what will be their relations to each other?" (p. 221). Finally, in a long concluding chapter she sets forth what she regards to be "The Conditions of Successful Economic Planning."

In this book the reader is carried over the familiar ground covered by such old works as the Webbs' *The Decay of Capitalist Civilization*, Hartley Withers' *The Case for Capitalism*, and the numerous recent books praising or condemning the economic experiments of Soviet Russia and those of post-war Italy and Germany. It is obvious that Miss Wootton has read widely and reflectively. While she appreciates the advantages of the economic system based on laissez faire doctrines, she is disturbed by the ridiculous and tragic conditions in which nations operating under that system find themselves. At the same time she

has watched with sympathetic interest the developments of the European rationalization movement and has observed on the spot the faltering progress of the Russian planned economy.

Being a careful and competent student of economics, the author sees features in a planned as well as in an unplanned economy that are highly desirable and others that cannot be defended. How, she asks, is it possible to salvage the best features of both, discard the undesirable ones, and so build a more perfect one? And she proceeds to undertake an audit with the view to answering that question.

The work of cataloguing the merits and demerits of the two systems is done in a masterly fashion. But the work of constructing a new synthetic system from the salvaged pieces proves far more difficult and in this respect the book leaves much to be desired. One cannot help but gain the impression that the author finds herself in the perplexing dilemma of having to choose between these two types of systems in their entirety, and she finds this impossible since she is enamored of certain desirable features in each that cannot be harmonized. And so she attempts to persuade the reader that *if* certain weaknesses *could* be eliminated from the planned and the unplanned economies, we *might* enjoy the blessings of a system combining the best features of a price economy and one based on the Soviet philosophy.

Unhappily, it seems to the present reviewer that the two systems remain in complete conflict with each other and cannot be harmonized. And the problem remains unsolved. A criticism of the physical features of the book may be in order. The parsimony of the publishers in printing the book in type too small and uninteresting is deplorable, for it makes reading this intriguing, if exasperating, book a painful task.

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The Business Bookshelf. Compiled by MARIAN C. MANLEY and MARY E. HUNT. Newark, N.J.: Public Library, 1935. Pp. 75. $2.00.

Fourth in the series of pamphlets compiled by the staff of the Business Branch of the Newark Public Library, this is a worthy companion to its three predecessors. The list is for the business man who wishes a handy guide to published information about the fields of business interest. The titles are classified under three main sections: "The Business Man Himself." "The Economic Background," and "Business Management." Titles are annotated, there are author, subject, and

title indexes, a list of publisher's names and addresses, a list of reference works, and a list of semipopular works dealing with current business and economic topics. The titles listed and described will of course be familiar to the specialist in any of the fields treated, but even he will find the list a convenient guide to information about other fields of activity. The writer has tested the value of the list in checking references and in seeking information of many kinds, and has found it uniformly and highly helpful.

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